AMMUNITION BULLETIN Nº17.

FOR INSPECTING ORDNANCE OFFICERS.

(FEBRUARY 1941.)

CHIEF INSPECTOR OF ARMAMENTS,
WOOLWICH, S.E.18.

SECURITY.

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Issued by:-

CHIEF INSPECTOR OF ARMAMENTS,

WOOLWICH.

Contents:-

135 - PROJECTOR, 3 INCH MARK I - STORAGE OF AMMUNITION.

The ammunition for this equipment is now coming forward and the following notes on packing, storage, care and preservation are given for general information. They cancel the information previously given at item No. 132 of I.O.O. Bulletin No.13.

General details of the ammunition are given in Fig. -

Packages :

The following packages have been approved :-

No. of package.	L	B ins.	D	Material.	Accommodates	Filled Weights
M.96	56.2	10.5	4.4	Steel	2 charges 8 fins	95½ lbs.
M.97	58.6	11.25	6.75	Wood	2 charges 8 fins	88½ lbs.
M.98	20.375	8.52	8.5	Wood	4 projectiles, plugged	84 lbs.
M.101	18.65	11.25	11.125	Wood	8 fuzes time No.700 with gaines and adapters, in 8 tinned plate cylinders	-
M.102	25.6	11.25	11.125	Wood	4 fuzes P.E. & Gaines in 4 tinned plate cylinders	-
M.104	19.3	8.2	7.2	Steel	4 Projectiles, plugged	84½ lbs.

The fuzes are in hermetically sealed cylinders.

Storage.

The propellant weighs 12 lb. 11 ozs. the bursting charge of the projectiles 3 lbs. 11 ozs. consequently the explosive quantities in terms of para. 23 Magazine Regulations, Part I, 1934 are as follows :-

Charge Propelling	6 lbs. 5½ ozs.	Category Y see para. 178.
Projectile	3 lbs. 11 ozs.	Category Z - do -
Fuze	-	Category X - do -

The complete U.P. is assembled at the firing position and is held there for ready use consequently it need not be considered for safety distance storage purposes.

This ammunition, in the packages enumerated, may be stored in the following types of buildings :-

[redacted]) Binless Magazine of the Standard A.D.G.B. type.
) Nissen Huts.
) Bin-type Magazine of the Standard A.D.G.B. type.

(A) has an effective floor space of 66' 6" x 22' with a runway and ssage down each side to the four doorways. Head room is 10' 6"

(B) has an effective floor space of 36' x 10' 9" allowing for a passage down one side. Four of these huts are intended, when provided at I.A.D.'s, to be equivalent to one Standard Binless Magazine but, to attain this, it is necessary to raise them on 2 foot brick walls. The head room at the centre without the brick walls is 9' 6".

(C) has a central longitudinal traverse and 9 bins on each side of this with passages and runways to the four doorways. The bins are 8' 9" deep, 6' 6" wide and have head room of 10 ft. 6 inches.

Stacking diagrams have been prepared for these three types of building, as shown at Figs 49,50 and 51 and copies of these are being issued to all concerned for exhibition at the Storehouse (Note :- The term Magazine is a misnomer for this ammunition. Explosives Storehouse is correct.) These diagrams are based on the following explosives quantities:-

Standard Binless buildings erected for A.D.G.B. have been given an inside distance of 80 yards between buildings, consequently, their explosive limit is 44,000 lbs, when traversed.

Four Nissen Huts in one group have also been given 44,000 lbs. explosive limit, when traversed.

Standard Bin type building erected for A.D.G.B. have been given an explosive limit of 1,000 lbs. per bin.

These are Peace time limits which for War, have been specially increased, with the approval of the Director of Artillery, to 55,000 lbs. and 1250 lbs. respectively.

Whilst, from the purely storage aspect, there would be some advantage in storing the charges, projectiles and fuzes in separate buildings as they are in different storage categories, the general principle of first and second line A.A. Ammunition storage is to hold complete rounds at E.A.M.s and I.A.D.'s as this facilitates issues to units. On this basis, the maximum number of complete rounds which may be stored in the three types of buildings will be:

		Peace	War	
Binless		4800	6000	
Nissen		1200	1500	
Bin-type.	Projectiles	264	330	per bin.
	Charges Propelling.	160	200	

The stacking arrangements must provide for complete rounds being deployed from each of the four doors in Bin and Binless buildings, consequently the propellant charges, shell and fuzes, must be stacked conveniently to facilitate this operation. The stacking diagrams indicate how this is achieved.

There is a considerable disparity in the space required for P.E. and No. 700 fuzes respectively, as there is also between wood and steel packages, but the diagrams show that it is possible to accommodate up to the limits, even in the most unfavourable distribution, although stacking will be a good deal higher in some cases than in others.

The bins containing projectiles in steel boxes are extremely under stacked as to capacity but it must be emphasised that the basic limitation in a bin type building is the explosive limit of 1250 lb. per bin in war and it is imperative, for safety reasons, to ensure that this limit, is not exceeded.

Battens should, as usual, be placed under the stacks and between certain tiers when required to stabilise the stack.

Special attention is called to the unusual behaviour of the propelling charges of U.P.s when they become involved in a fire. They become projectiles and will menace the whole area unless special care is taken in storage. Traverses are essential and they should be at least one foot higher than the stacks. The face of the traverse nearest the building must be vertical, the double sloping sided traverse will not do.

CARE AND PRESERVATION

Packages.

The usual general precautions must be taken in storage and transit, viz:-

1. Packages must be kept dry.
2. Packages must be kept in an equable temperature, particularly those containing charges propelling.

The charges propelling are on no account to be used if their temperature exceeds 86°F. The charges are marked so, (86°F), in red.

3. Packages, particularly those containing charges propelling are not to be exposed to direct sunlight.

Fuze cylinders are hermetically sealed and should not be opened until the fuzes are actually needed.

Projectile and charge packages are not provided with interior linings, therefore all the general points on care and preservation set out in the "Notes on care and preservation of A.A. Ammunition 1940" should be observed.

"READY-USE" AMMUNITION.

In accordance with the usual procedure only the minimum number of rounds necessary to meet operational requirements should be prepared for "ready-use." With this nature of Ammunition there is no package for the complete round and this proviso is therefore of special importance.

When assembled, the rounds should be placed in a rack of the "wine bin" variety, care being taken to provide ample support to avoid any loss of longitudinal alignment. Three supports are needed, one for the projectile slightly in advance of the charge tube, i.e. about its centre of gravity and two for the charge unit, one of these being 42 inches and the other 15 inches from the tail. The rounds should be horizontal. Special care is necessary to ensure that the stacking arrangements avoid any damage to the fins.

In view of the danger, should a fire occur, the "ready-use" ammunition requires a stout traverse of concrete or other material placed about 3 to 6 inches from the fuzed end of the rounds and for further safety this traverse should be carried down the sides and over the top at least half way down the round. The traverse must be strong enough to resist the pressure of the burning charges i.e. about 3,000 lbs. per round.

When fuzed with No.700 fuze, it is imperative that the longitudinal holes in the head of the fuze are kept free. The functioning of the fuze depends upon this. Luting R.D.1154 or any other substance is not required in the holes for protective purposes. Should grit or dirt enter the holes, this is to be removed by carefully tapping the nose on a wood block. If this does not clear them, set the round aside for special examination.

Rubber fuze covers are provided for the No.700 fuze, these must be placed on the fuze immediately the fuzing operation is completed or the fuze ring moved. R.D.1154 must not be put on the time rings where rubber covers are in use as the composition destroys rubber. The rubber cover must be removed before the round is fired, otherwise the fuze will be blind in the air, with a considerable risk of its functioning when the round reaches the earth, usually in friendly territory.

Should rubber covers not be available, the fuze rings are to be carefully treated with R.D.1154 immediately after fuzing and after any movement of the time ring.

Ordinary oil is not to be used on the projectile or charge as this may damage the fuze or charge. The round is to be kept clean and dry. Should the paint on the projectile be damaged, treat the damaged part by painting with Boiled Linseed Oil, Lead free.

Threads of fuzes should be coated lightly with Luting before insertion in the projectile.

"Ready-use" ammunition must be kept dry, in an equable temperature and protected from direct sunlight.

Sufficient packages to take the "ready-use" rounds should be held near the position in anticipation of a move being ordered before all the prepared rounds are expended.

The care and preservation of P.E. fuzes will be dealt with by special arrangement.

A provisional Handbook has been prepared for the equipment containing descriptive details of the Ammunition and the method of preparing it for use.

194 - HEAT TEST OF AMMON GELIGNITES.

A number of Trade Gelignites of the Ammon type i.e. containing Ammonium Nitrate, have been issued to the service and the question of Heat Testing according to R.A.O.S. Part II, Pamphlet No.10, para. 72(b) has been raised as the test may not give a positive result owing to masking of the reaction by traces of ammonia evolved during the heating.

The following procedure, recommended by the Chief Chemical Inspector, should be adopted for these Ammon Gelignites.

After introduction of the explosive admixed with French Chalk into the test tube as laid down in para. 72(b)(i) spread upon the surface of the mixture, firstly a thin continuous layer of French Chalk and secondly, about 4 grams of boric (boracic) acid powder in the form of a continuous layer. The boric acid should previously have been well dried in the water oven. Then insert the test paper and proceed in the usual way.

Under the above circumstances, the test result is not invalidated by masking due to evolved ammonia and a result is obtained which is considered to be truly indicative of the condition of the explosive.

195 - GRENADE RIFLE NO.68 A.T.MK.II.
Fig. (52)

This grenade is 7 inches overall length and 2.54 inches overall diameter. It comprises a steel body, bell shaped, the open end of which is fitted with a cup liner, which forms a hollow in the H.E. and is secured by a screwed collar. The dome of the body is bored and threaded to receive the ail. The tail has four straight vanes, and is centrally recessed to receive the striker and detonator holder, whilst a Steel Gas check is fixed to the outer end by a bakelite screw. The screw is recessed to facilitate manufacture.

The steel striker, cadmium or copper plated, is retained by shearing and safety pins, the latter having a warning plate, held by a whipcord becket. The safety pin is withdrawn from the grenade before firing. The shearing wire is of copper.

The detonator holder screws into the tail and is prepared centrally to accommodate a C.E. pellet and a 5 gr. fulminate or Lead Azide detonator, a smaller channel between the two being charged with stemmed C.E. A creep spring lies between the striker and detonator.

The Grenade contains a bursting charge, $5\frac{1}{2}$ oz. of R.D.X./B.W.X. or Plastic Explosive (P.E.). The body is painted yellow, and has a red band, to denote filled, and a green band, overprinted R.D.X./B.W.X. or P.E. to indicate the bursting charge.

Grenades are packed with gas checks off, 17 in a box, P.59.Mk.II the dimensions of which are 19.15" long, 8.35" broad, 7.85" deep, and the gross weight $49\frac{1}{2}$ lbs. 20 Cartridges are packed in a hermetically sealed tin carried in the box, P.59.

Each grenade weighs 1-lb.$15\frac{1}{2}$-ozs. with gas check.

On Firing, there is no movement of the internal components, but on impact the striker moves forward, breaking the shearing wire, overcoming the creep spring and piercing the detonator, which functions the filling of the grenade.

196 - WET GUNCOTTON SLABS - LOSS OF POWER.

Arising out of a report from I.O.O. Egypt on the results of examination and testing of Wet Guncotton Slabs, which gave indifferent results at proof showing a loss of power, the following remarks by C.S.R.D. are of general interest to I.O.O.s.

"Previous experience shows that the deterioration of Guncotton due to chemical causes is slow. Any development of acidity is effectively restrained by the chalk in the Guncotton. No instances of Wet Guncotton becoming dangerous in storage due to spontaneous decomposition is known to this Department (except possibly under the influence of bright sunlight). Mould growth may occur if the Guncotton is not protected by carbolic acid, but this should reveal itself by discolouration and smell. There is no mention of this in the report. Any deterioration due to chemical or bacteriological causes which would lead to loss of explosive efficiency would be accompanied by a lowering of the nitrogen content. Information on this point is not available. A more probable cause of the loss of explosive power is swelling of the slabs, leading to inhomogenity. This has been found to occur when Guncotton has been stored for years and periodically re-wetted. The swelling leads to loss of sensitiveness to detonation and impaired performance. The reference to flaking in the report suggests that this may have occurred. Some years ago Guncotton Slabs which showed signs of swelling were subject to trials here, and it was found that the swollen slabs were not so efficient as normal slabs, but it was indicated that efficiency could be restored by re-pressing the slabs. An alternative possibility is that the Guncotton had been over-wetted, thus rendering it inert. This would no doubt have been detected by the excess of weight. Instructions are given in R.A.O.S. for dealing with charges which are high to weight."

197 - STORAGE OF AMMONIUM NITRATE.

Ammonium Nitrate is liable to be detonated if a sufficiently powerful initial detonating impulse is brought to bear upon it. This can be effected by a High Explosive bomb or large grenade if detonated in close contact with the Nitrate.

When the Nitrate in a drum is detonated, the detonation will be transmitted to other drums in contact and thus a very heavy detonation may be built up where a considerable number of drums containing the nitrate are stored in physical contact.

A small gap of 12 inches will probably prevent the initial detonation being passed on to the next drum, but this gap would not provide safety where several drums are detonated simultaneously.

It has been found that in a line of drums when detonation is effected at one drum, the detonating impulse tends to weaken as it moves from the original source.

The majority of enemy bombs have a delay action.

From these considerations it is assumed that, if the drums containing Ammonium Nitrate are placed on their side, single tier high, two drums end to end in groups of 40, with a clear space of 3 feet separating one group from another, there is practically no danger of mass detonation should one or more of the drums in the group be detonated. Moreover, with single tiers, the delay action will allow the bomb to penetrate to the ground so that when detonated, it will not be in close contact with the Nitrate and so be less likely to set up detonation there. Experiments are in hand to clear up these points.

It is obviously uneconomical to store on the single tier system in hired buildings, hence the adoption of the principle of open air storage. This introduces the further problem of wastage as weather conditions impose a severe test on the containers, which rust from the outside, unless the paint protection is fully maintained in a serviceable condition. Only approved makes of paint are to be used on the drums. The main cause of corrosion is loose Ammonium Nitrate which if allowed to remain on the drum either inside or out will rapidly eat its way through the material. The precautionary remedy is the thorough cleaning of the drum at the place of filling and on arrival at the storage site. The latter is most important and should be followed by a coat of paint.

The usual colour of paint is black, but there is no reason why a camouflage painting scheme should not be adopted in order to break up the symmetry of the dump and render it less conspicuous from the air. This would be necessary if day bombing is likely, but if only night raiders have to be considered, very little appears to be gained by camouflage.

Each drum is 4 feet long 2-ft.3-ins. in diameter, and contains 4-cwt. of Ammonium Nitrate.

Ammonium Nitrate is not an explosive within the terms of the Explosives Act and is therefore treated as an ordinary commodity for transport and storage. The packages carry no explosive label. In war, however, owing to its liability to be detonated by a bomb in contact, all Service stocks are treated for storage purposes, as explosive.

For safety distance purposes, 2-tons of Ammonium Nitrate are taken as equivalent to 1-ton of T.N.T.

198 -<u>EXPLODERS FOR 6" MORTAR</u>.

These M.L. mortars have been issued to certain units and a Handbook is in the Press, which gives the usual detailed description of the Ammunition.

The H.E. Bomb is fitted with an Exploder Container which accommodates the Exploder.

There are four Marks of Exploder, viz:- Mks. V,VI,VII and VIII.

The Mark VIII exploder is 3.55 inches long and 0.9 inches in diameter. It comprises a brown paper cylinder containing three C.E. pellets (one solid and two perforated) and a No.8 large detonator, with flange, containing fulminate of Mercury. The lower and solid end is closed by a millboard disc and felt wad, the upper end has the detonator, millboard washer, brass cap, white paper disc and felt washer. A felt wad is placed below the detonator to cushion any set-back on firing.

The ~~detonators~~ exploders are issued in a hermetically sealed package containing 5 ~~or 20~~. They are placed in the bomb with the detonator towards the fuze i.e. the end with the brass cap.

The Mk.VII differs from the Mark VIII in having the pellets of picric Acid.

The Mk.VI differed from the Mk.VII in minor details. There is no paper washer over the detonator.

The Mk.V differs from the Mk.VI in having pellets of C.E.

<u>To Fuze the Bomb</u>.

Remove the plug, insert the Exploder into the container with the detonator outwards. Apply a thin layer of Luting to the threads of the fuze and screw the fuze fully home on to a fillet of luting placed around the shoulder.

When ordered, withdraw the cap, with liner and safety pin, insert the igniter, which gives a delay action on impact and has a blue head, or the detonator, which gives instantaneous effect on impact, and has the head painted red. Care must be taken to see that the igniter or detonator is fully home with the head of the cartridge case resting snugly on the shoulder provided in the fuze.

The safety pin is only to be withdrawn and the cap removed immediately prior to loading.

Luting should be placed in all openings of the fuze to keep the fulminate dry. R.D.1154 must not be used for this purpose in view of the presence of a rubber washer.

199 - CORDITE CHARGES 37 M.M.

A certain amount of ammunition for this equipment was received from Polish sources and, in the main, has been issued to overseas stations.

The Cordite is similar to Bofors and is to be tested and sentenced similarly to Bofors Cordite as laid down in the Regulations for Army Ordnance Services, Part II, Pamphlet No.7. Table III.

The composition is approximately :-

Nitrocellulose (Soluble)	...		58
Nitroglycerine	...	...	36
Centralite	...	...	$2\frac{1}{2}$
Nitroxylene	...	...	$2\frac{1}{2}$
Mineral Matter	...	...	1

100

For comparison refer to Item 14, Bulletin No.2 and Item 24, Bulletin No.3.

200-GRENADE HAND NO.69 MARK I.

Fig. (53)

This allways type grenade is about $5\frac{1}{2}$ inches long, 2.4 inches diameter and weighs approximately 11-ozs. The principal parts are made of Bakelite and comprise a body in two parts, filling plug, detonator tube and base plug. The mechanism holder screws into the upper part of the body and carries the cap pellet and firing mechanism.

The firing mechanism comprises a detonator in the detonator tube, a percussion cap in its holder, a steel striker needle with spring, lead ball and closing cap. The closing cap and striker are saucer shaped on their inner surfaces to provide inclined planes for the lead ball.

A steel safety bolt passes through the striker stem, resting on the cap holder and is attached to a length (12 inches) of webbing which is wound round the head of the grenade and has a lead weight on the outer end.

A safety cap covers the lead weight and tape.

The No.46 detonator is issued separately, it contains C.E. and A.S.A. composition.

To prepare the grenade. Remove the base plug and insert the detonator, with its open end towards the striker, replacing the base plug by screwing it well home. This is very important as a loose detonator may prove dangerous, although the rubber support on the base plug provides a safety factor.

Before throwing, remove the safety cap.

Whilst the grenade is in the air the lead weight unwinds the tape (an operation which can be facilitated by the thrower imparting a spinning motion, in the correct direction, to the grenade as it leaves his hand like a bowler at cricket.) This initial spin is particularly necessary for short distance throws, to ensure unwinding and arming; and withdraws the safety pin.

On impact, the lead ball moves from the centre outwards and by acting on the inclined surfaces of the closing cap and striker, the latter is forced on to the percussion cap, which fires, igniting the detonator and functioning the grenade.

The grenade may be filled Amatol 80/20 or Lyddite, and is marked externally, as shown in the figure.

PACKING AND STORAGE.

They are packed in Boxes, Ammunition, 2 inch Mortar or Bomb Thrower B.167, Mark I/L/. Steel, which holds 34 grenades and 34 detonators. The grenades are packed in paper tubes, 4 per tube, each grenade separated by a millboard disc. One of the tubes holds 2 grenades and 2 detonator cylinders. This tube is marked in two places with the word "DETONATORS", and is placed in the centre of the top layer of tubes.

The detonator cylinders (DD/L/11222) are of wood with a tinned plate cover, sealed with a tape band. They have 17 holes drilled partly through from the tinned plate cover, to take the detonator.

The box is 21.8 long, 9.35 deep, 9.5 wide, and the gross weight is 46 lbs.

The filled package is classified as Group VIII, Category Z.

201 - BOMB M.L.SMOKE. OBSERVING 3-INCH MORTAR 10 LB. MARK I.

Fig. (54)

This is the ordinary type of bomb, containing Titanium Tetrachloride, issued fuzed with D.A. No.138 or plugged with Plug fuze hole 1.375 inches No.4. The figure indicates the arrangement and shows the marking. These Bombs are in Group XIII, for storage and transport purposes. Packing see below.

202 - BOMB M.L. STAR. 3-INCH MORTAR. 10-LB. MARK I.

Fig. (55)

The bomb body is of the usual design except that the head is truncated and the tail bored and threaded to receive a screwed plug. This plug receives the tail, with fins and is prepared internally for the delay composition of S.R.341, which is pressed into position, a few graines of R.F.G.2 Gunpowder being placed on either side. A 7 dram burster of G.12. in a muslin bag, forms the bursting charge to blow out the steel disc, star and parachute. The star is at the outer end of the bomb and consists of a steel casing, having a lug and pin connection for parachute wire. It is charged with Composition S.R. 562 and primed with Gunpowder at the outer surface. Four lengths of quick-match have their ends in this priming the other ends being led outside the star towards the rear. The parachute is 36 inches and is contained in a tinned plate case. The head of the bomb is a ballistically shaped steel plug secured to the body by 3 shearing screws.

On firing, the primary charge ignites the delay composition, which burns for 10 seconds whilst the bomb is in flight. On completion, the bursting charge is ignited, expelling the baffle plate, parachute and case, star and head, at the same time igniting the ends of the quickmatch.

The parachute opens, as the star falls, the latter is ignited by the quickmatch and burns for 30 to 45 seconds.

The Bomb is marked as shown, and is placed in Group VIII for storage and transport purposes.

Packing. These two bombs are packed like H.E. Bombs, but the packages are distinctively marked "STAR" in one inch yellow stencilling, in the case of Star bombs.

203

BOFORS CORDITE.

As History Sheets, Army Form G.935, have to be maintained during War for all Bofors Cordite in the Service, in order that the Tests laid down in R.A.O.S. Part II, Pamphlet No.7 may be carried out, the following information is published for the information of I.O.O.s whose duties bring them into touch with Q.F. 40 m.m. equipments.

The following Batch Numbers of 40 m.m. Ammunition contain Bofors Cordite. This type of Cordite will not be found in Batches 110A onwards.

B.1 B.1A B.1B B.1C B.1D
B.2 B.2A B.2B B.2C B.2D B.2E
B.4 B.4A B.4B B.4C B.4D B.4E B.4F
B.5 B.5A B.5B B.5C B.5D B.5E B.5F B.5G B.5H B.5J
B.6 B.6A B.6B B.6C B.6D B.6E B.6F B.6G B.6H
B.7 B.7A B.7B B.7C B.7D B.7E B.7F B.7G B.7H B.7J B.7K
B.7L
B.9 B.9A B.9B B.9C B.9D B.9E B.9F B.9G B.9H
B.10 B.10A B.10B B.10C B.10D B.10E B.10F B.10G B.10H
B.14 B.14A B.14B B.14C B.14D B.14E B.14F B.14G B.14H
B.15 B.15A B.15B B.15C B.15D B.15E B.15F B.15G B.15H
B.18 B.18A B.18B B.18C B.18D B.18E B.18F B.18G B.18H
B.19 B.19A B.19B B.19C B.19D B.19E B.19F
B.20 B.20A B.20B B.20C B.20D B.20E B.20F B.20G B.20H
B.21
B.101D B.101F B.101G B.101H B.101J B.101K B.101L B.101M B.101N B.101P B.101Q
B.101R
B.102A B.102B B.102D B.102E B.102F B.102G B.102H B.102J B.102K B.102L B.102M
B.102N B.102P B.102Q B.102R B.102S B.102T
B.103A B.103B B.103C B.103D B.103E B.103F B.103G B.103H B.103J B.103K B.103L
B.103M B.103N B.103P B.103Q B.103R B.103S B.103T B.103U B.103V B.103W B.103X
B.104A B.104B B.104C B.104D B.104E B.104F B.104G B.104H
B.105A B.105B B.105C B.105D B.105E B.105F B.105G B.105H B.105L B.105M B.105N
B.105P B.105Q B.105S B.105V B.105Y B.105Z
B.106B B.106C B.106D B.106E B.106F B.106G B.106H B.106J B.106K B.106L B.106M
B.106N B.106P B.106Q B.106R B.106S B.106T B.106U B.106V B.106W B.106X B.106Y
B.106Z
B.107A B.107B B.107C B.107D B.107E B.107F B.107G B.107H B.107J B.107K B.107L
B.107M B.107P B.107Q B.107R B.107T B.107V
B.108A B.108B B.108C B.108D B.108E B.108F B.108H B.108J B.108K B.108L B.108N
B.108P B.108R B.108U B.108W B.108Z
B.109A B.109B B.109D B.109E B.109F B.109G B.109H

204 **MARKINGS - CORDITES MK.I, M.D.,M.C. & R.D.B.**

In view of the ageing and consequent probable instability of above mentioned natures of cordite, the question of their elimination (with the exception of certain sizes) is under consideration.

Pending the replacement of these cordites by later natures it is necessary to impose restrictions as to the regions to which they may be transported and stored without undue risk of inflammation. The system of marking with a red disc and date (Referred to in Item 74, Bulletin No.8) restricted the issue of certain lots of M.D. and R.D.B. to France. Cartridges bearing this marking will not be sent overseas and those which are already overseas will be segregated at once and destroyed as soon as the supply situation permits. Further instructions regarding this action will be issued. The making up of cartridges with cordite of this red disc standard and the use of the marking will be discontinued forthwith except in the case of 4.5-inch cartridges filled American 1918 N.C.T.065 (Vide Item 161, Bulletin No.15).

Bulk cordite M.D. & R.D.B. required for the making up of Cartridges will be subjected to a special examination by C.S.R.D. to ensure that only those lots which could be given a "life" of 1942 or later if stored in the Middle East (Excluding equatorial regions) are used. Packages and cartridges containing these lots will be marked with two discs, one over the other, followed by the last two figures of the year at the end of which the official life expires, see below. The markings will be coloured blue when on packages and B.L. cartridges and black - by silver nitrate process - on Q.F. cartridge cases.

42

205 - FUZES - NON LEAD FREE.

Reference Item 158, Bulletin No.15. When these non-lead-free fuzes are inserted, the shell will be stencilled with the words "FIRE BY" followed by a date. The date - month and year - will be six months from the date of fuzing.

The words "FIRE OR DESTROY SHELL BY....."(month and year) will also be stencilled on the box.

206 - BULLETIN AMENDMENTS.

Bulletin No.6. Item 53 - Line 23
Delete "thick" and substitute "thin".

Bulletin No.16. Page 6 - Line 9
Delete "Niscous" substitute "viscous".

Item 189 - Line 4
Delete "probable" substitute "probably"

Fig. 47. Instructional Label
Delete "gases" and substitute 90 secs.

207 - BOTTLES STONE, SCREW STOPPERED, CHEMICAL 1 PINT.
Fig. 56

This is a chemical device for use in training personnel in real gas condition. The contents of the bottles are actual war gases and must not be confused with any artificial substitute so that all concerned must know exactly what is being handled.

An ordinary stone bottle of the type used commercially for Ginger Beer is charged with about 550 c.c. of Chemical and the screw stopper replaced on a rubber washer. The bottle is painted and marked as shown on the Fig. and packed in a tinned plate cylinder No.322. surrounded with charcoal. The lid is soldered on and a tear off strip provided. Ten cylinders are packed in a wood package together with 10 Adaptors pouring. The charcoal in the cylinder will absorb all the contents of the bottle in the event of leakage taking place.

The Box is 43.12" x 13.8" x 14.93" wide and weighs complete 150-lbs.

The Cylinder No.322 is 10.20" long.6.35 diameter and when filled weighs 11-lbs.

The Bottle, when filled weighs $3\frac{3}{4}$-lbs. The quantity of charcoal in each cylinder is $4\frac{3}{4}$-lbs.

The Box is painted Grey and has one coloured Band to indicate the type of chemical used. In addition the INITIAL letters and number to indicate the particular chemical is painted on as usual. The cylinder and bottle are painted and marked as shown in the Fig.

LABEL H.1345.

H.1345

BOTTLE, STONE, SCREW-STOPPERED, CHEMICAL, 1-PINT.

INSTRUCTIONS FOR USE.

1. REMOVE TEAR-OFF BAND AND LID FROM CYLINDER.
2. REMOVE SUFFICIENT PACKING TO UNCOVER THE STOPPER OF BOTTLE. THE PACKING MAY BE CONTAMINATED; CARE SHOULD THEREFORE BE EXERCISED.
3. LOOSEN STOPPER SLIGHTLY TO RELEASE ANY PRESSURE FROM THE BOTTLE.
4. WHEN THE PRESSURE HAS BEEN RELEASED, THE BOTTLE CAN BE REMOVED FROM THE CYLINDER.
   REMOVE STOPPER FROM BOTTLE AND REPLACE WITH ADAPTER SUPPLIED IN BOX.
   THE ADAPTER IS TO BE SCREWED DOWN TIGHTLY.
5. THE LIQUID CAN NOW BE POURED OUT OF THE BOTTLE THROUGH THE ADAPTER, THE SMALL DIAMETER TUBE BEING UPPERMOST.

SIZE OF LABEL:- 8 INS. X $4\frac{3}{4}$ INS.

COLOUR OF INK:- BLACK.

COLOUR OF PAPER:- WHITE "B" OR "C" SERIES.

ENEMY AMMUNITION.

208 - GERMAN ANTI-WITHDRAWAL DEVICE ZUS 40. (Fig. 61)

Ref. Bulletin No.15, Item 174. As the result of further information the description given is cancelled and the following substituted:-

This device is intended to cause detonation of German H.E. bombs if an attempt is made to withdraw Rheinmetall fuzes from them. The device can be applied to any German Rheinmetall electric fuze fitted with a gaine but is most likely to be used in conjunction with the long delay fuze El. A.Z. (17).

The drawing indicates the arrangements of the device except that its gaine, which screws into the bottom, is not included.

The needle member (1) is pressed forward by the spring (2) but is held away from the detonator (5) by a detent (3). The latter is located by the ball (4) below it and maintained in position by the pressure exerted by the needle member (1).

When the gaine of a Rheinmetall fuze is inserted in the top of the device the needle member (1) is pushed outwards slightly thus removing the frictional constraint from detent (3) which is now located by ball (4) under the action of the detent spring (7).

The device is not armed until the force of impact transverse to the fuze, shakes the ball (4) out of the conical recess in the detent (3) which is then pushed clear of the needle (1) by the spring (7) and all three components fall into recess (8).

If an attempt is made to withdraw the fuze from the bomb the device is pulled upwards also owing to the pressure of the needle member (1) on the gaine of the fuze. This movement is prevented however by the two knife edges (6) held outwards by springs which bite into the wall of the exploder tube of the bomb. The gaine of the fuze is therefore withdrawn from the device and after a movement of about 0.6 inch the needle member (1) is clear of the gaine and is forced by the spring (2) into the detonator (5). The flash from the latter passes to the gaine screwed into the bottom of the device (not shown on the drawing) and the bomb is detonated.

209 - GERMAN INCENDIARY BOMBS.

With reference to the 1 Kilo Incendiary Bombs containing an explosive charge referred to in item 169 of Bulletin No.15, it would appear that the letter "A" painted in Red on the base forms a user distinguishing mark for this type. This marking has been found on a number of unexploded bombs.

210 - BOMBS, AIRCRAFT, ANTI-PERSONNEL, "SPEZZONE" TYPE. (ITALIAN). (Fig. 57)

1. Three variations of this type of bomb, varying slightly in design, (a) of the method for producing fragmentation, (b) in size, have been discovered. The fuzing of each is identical and consists of an allways striker, cap and detonator. The safety device is also the same and consists of a safety rod which screws into the rear of striker housing and passes through the striker pellet. This safety rod is withdrawn during the fall of the bomb by the rotation of a simple swivelling arming vane.

2. The three variations are shown below:-

	Type "A"	Type "B"	Type "C"
Weight.	1¾ kgm.	1¾ kgm.	4 kgm. (suspect).
Filling.	T.N.T.block.	T.N.T.block.	T.N.T.block.
Diameter.	2.75 ins.	2.75 ins.	3 ins.
Overall length.	6 ins.	6 ins.	6 ins.

	Type "A"	Type "B"	Type "C"
Casing and method of producing shrapnel.	Thin steel cylinder with substantial ends. Cylinder is surrounded by coil spring which breaks into pieces 1 inch to 2 ins long X 0.2 inch X 0.18 in.	Thin steel cylinder with light ends enclosing around an inside case coil spring similar to type "A".	Double walled steel cylinder. Space between walls filled with shrapnel embedded in concrete.

3. The T.N.T. block is protected in each case, by felt washers at each end and round the sides by paper packing. The T.N.T. block is recessed to allow introduction of the detonator (brass tube 2.2 ins. x 0.35 in. diameter, filled T.N.T.)

4. The detonator is screwed into an adapter in the end cover. The other end of the adapter is concave and threaded internally to take the brass fuze cover. The concave portion, together with a similar concave portion on the pistol cover, forms the housing for the initiating unit. The initiating unit, which is floating, consists of a striker pellet and striker sleeve, into which is screwed the cap. Between the pellet and the cap there is a light creep spring.

5. Unfuzing.

(a) The bomb is in a safe condition if the safety rod is in position. If the safety rod is missing, hold the bomb in the fuze down position for carrying or unfuzing.

(b) Unscrew either the pistol adapter or the rear end of the bomb. Both these operations remove the detonator from the filling of the bomb.

(c) Unscrew the detonator from the adapter.

(d) Unscrew the brass firing mechanism cover from adapter.

(e) Remove the striker unit complete with initiating cap.

211 - SHELL H.E. M.30. 8 c.m. (GERMAN) Fig. 58.

The following are the details of this design:-

Calibre 80 m.m. (3.15 inches)
C.R.H. 5 (approx.)
Base streamlined $6\frac{1}{2}$ degrees.
Weight 17.66 lbs.
H.E. capacity 8.9%.

An interesting feature of the design is the curvature of the streamlined base. This, however, according to our experience gives no material advantage over a straght taper.

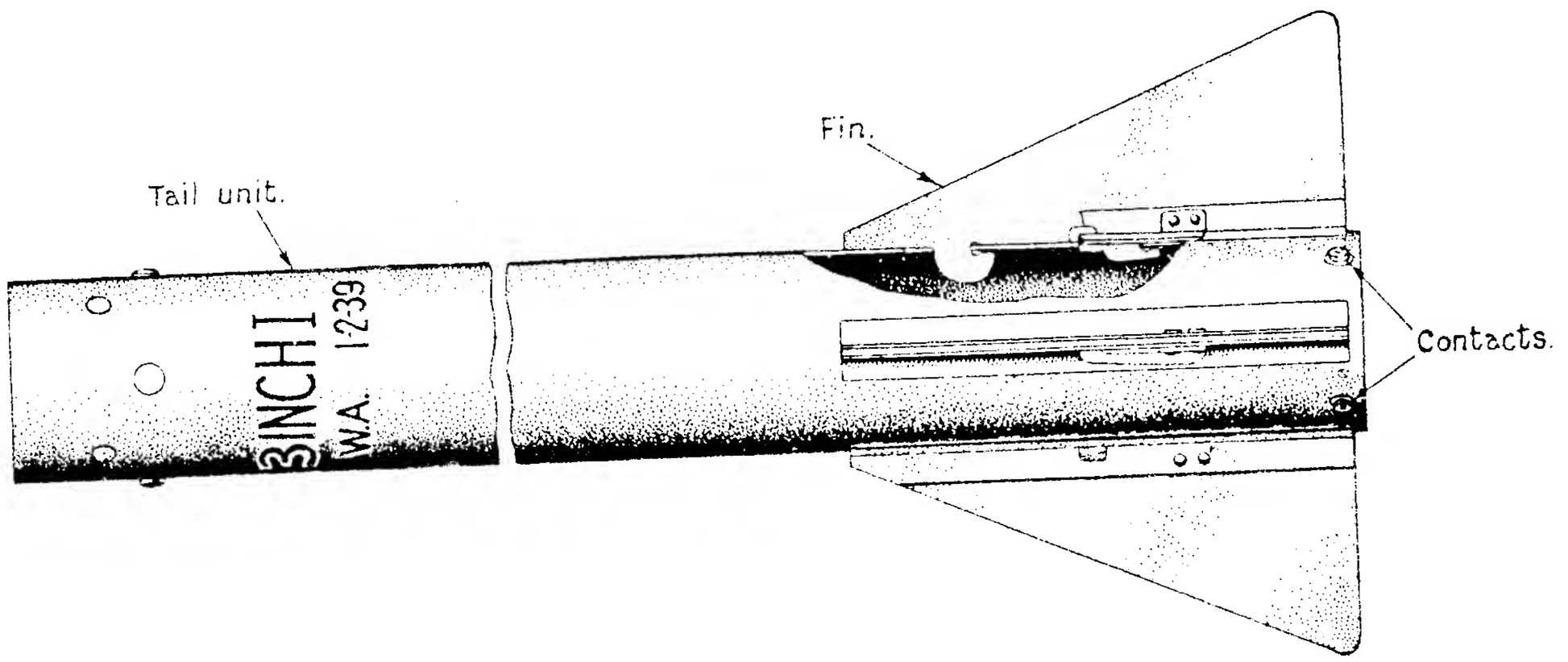
212 - BOMBS, AIRCRAFT, ITALIAN - GENERAL DETAILS. Fig. 59-60.

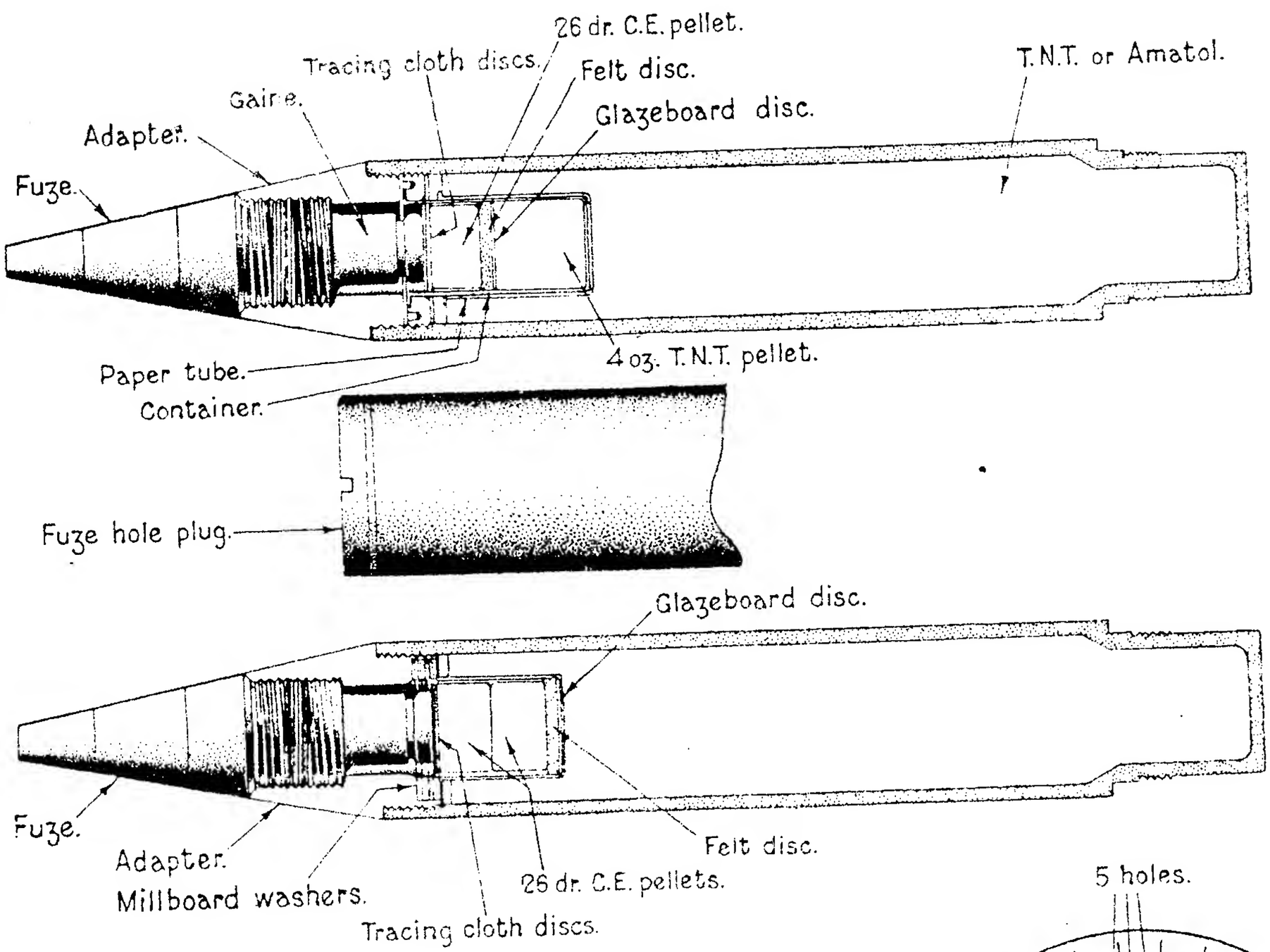
Reference Item 173, Bulletin No.15, the following further details are published for information. Some new types are indicated and the dimensions of bombs already reported on have been confirmed, for particulars see pages 16 and 17.

In addition, there is evidence that the following colours are used:-

Red	-	Explosive
Black	-	Incendiary
Yellow	-	Special liquid
White	-	An inert bomb

The main portion of the body of the bombs appears to be coloured grey, and the above colours apparently refer to the noses.





Gaine N° 12.

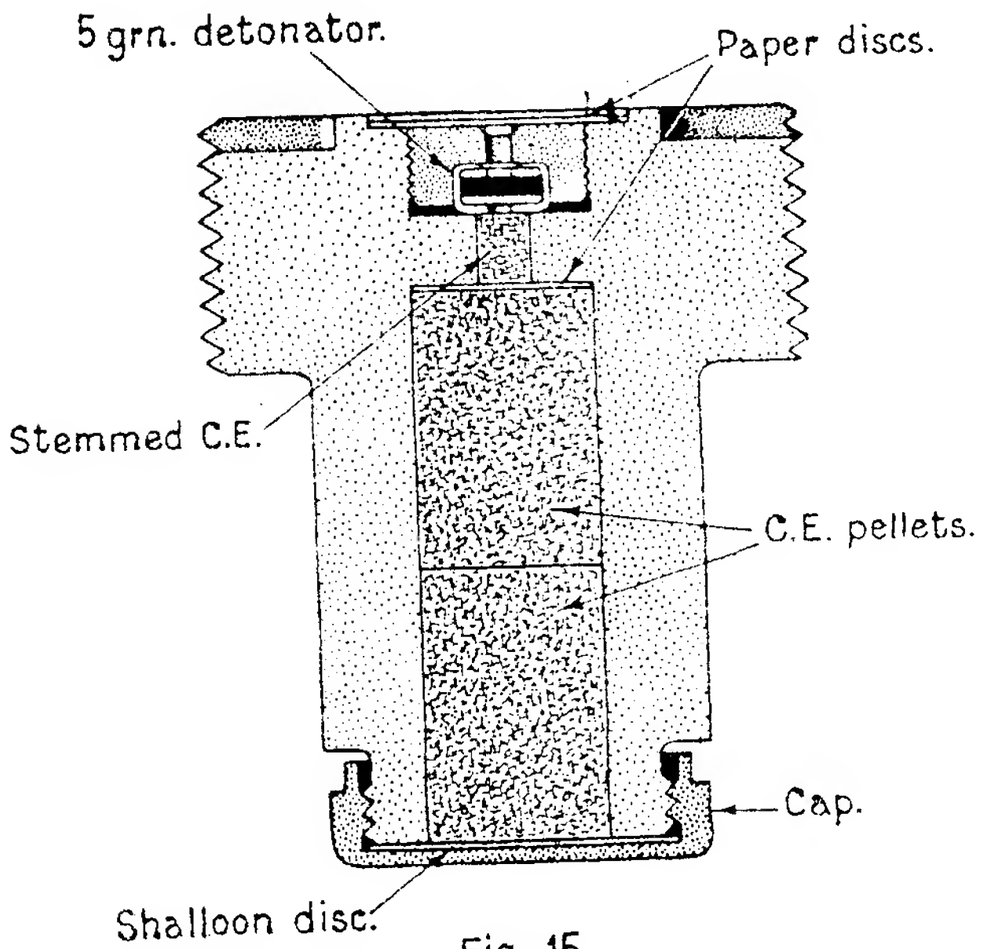
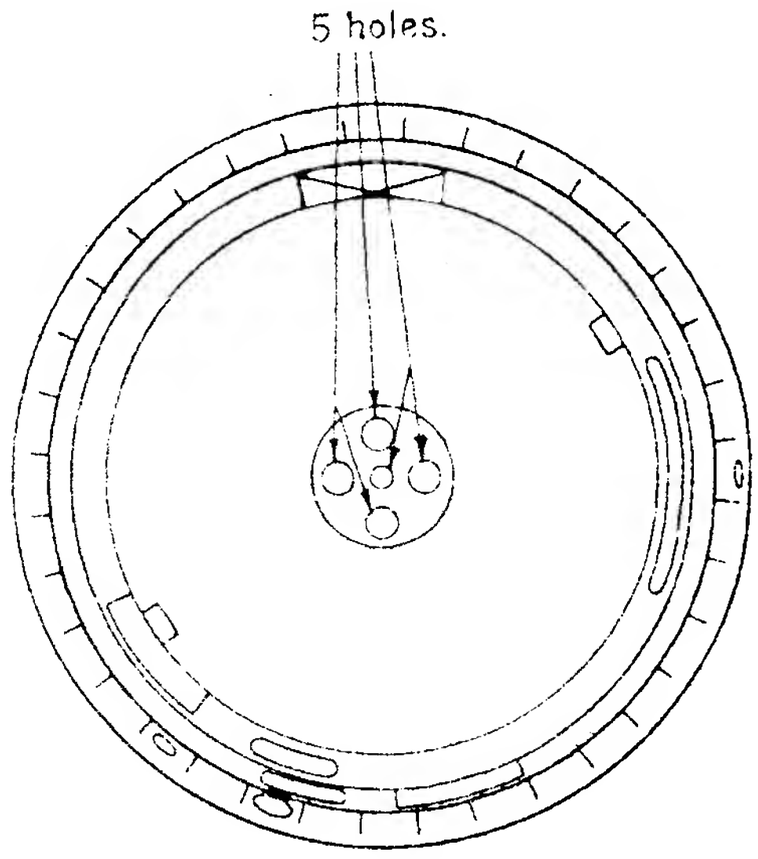


Fig. 15



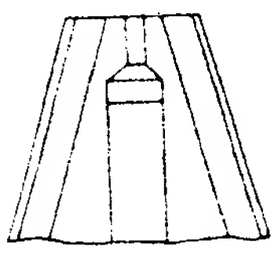


Fig. 16.

Type of bomb. Italian designation.	Description or English equivalent designation.	Weight of the complete bomb.	Weight of the explosive charge.
		kg.	kg.
Bomba da 800 - Mod 28	G.P.	800 (approx.)	357
Bomba da 500 - Mod 28	G.P.	500	220
Bomba da 250 - Mod 28	G.P.	250	120
Bomba mina da 104.	S.A.P. thick wall	104	30
Bomba mina da 100.	S.A.P. thick wall	100	27.5
Bomba torpedine da 100.	G.P.	100	50.6
Bomba sferica da 70.	Spherical with suspended and articulated tail fuze.	70	44
Bomba torpedine da 50	G.P.	50	25
Bomba mina da 15.	Thick wall.	15	5.6
Bomba da 12.	Antipersonel.	12	1.8
Bombetta spezzone da 2	Antipersonel.	2	0.36
Proietto da esercitazione da 10.	Practice bomb.	11	-

In addition the following types of bombs have been in use in the Italian Air

C.500	Similar to bomba da 500 in shape.	-	-
D.Q.(Quota).	-	-	-
160 A.S.	Anti-submarine.	160	-
Bomba mina da 31.	Thick wall.	31	10.5
20 I	-	-	-
3 C.A.	-	3	-
2 kg.incendiary	-	2	-
1 kg.incendiary	-	1	-
Manzolini	Thermos vibration type.	4.5	-
20 C.A.	-	-	-
Bomba torpedine da 24	-	24	12

Note.-Bombs marked with a * appear

1 kg. =

Diameter of the body of the bomb.	Maximum transverse dimension of complete bomb.	Length of the body of the bomb.	Length of the complete bomb.	Notes.
ins.	ins.	ins.	ins.	
18	18	75	145	* Nose and tail fuse.
18	18	52	102	* Nose and tail fuze.
17	18	32	80	* Nose and tail fuze.
10	11	28	43	Tail fuze only.
10	10	30	48	* Tail fuze only.
11	11	33	50	Tail fuze only.
16	-	-	-	Possibly for use against submarines.
10	10	24	39	* Tail fuze only.
5	6	22	32	Tail fuze only.
4	4	17	33	* Nose fuze only.
3	3	4	6	* Tail fuze only.
5	5	9	18	-
Force:-				
18	-	-	100	Presumed gas bomb.
-	-	-	-	Nose fuze only.
12	-	-	60	* Nose and tail fuzes.
6	8	22	32	Tail fuze only.
6	-	-	30	* Nose fuze only.
-	-	-	-	Nose fuze only.
3	-	-	12	Nose fuze only.
-	-	-	-	Nose fuze only.
4	-	-	14	*
-	-	-	-	-
6	8	22	31	-

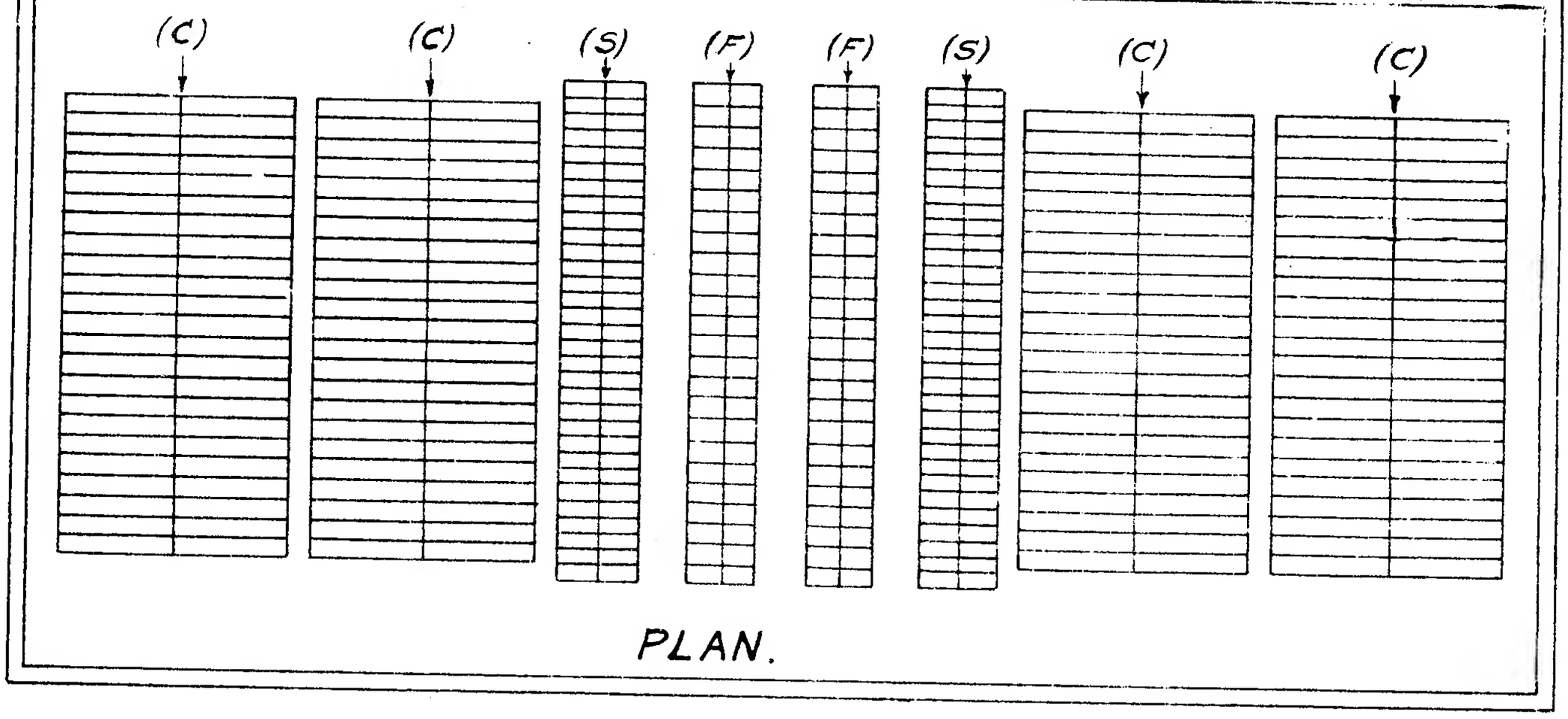
to be those in general use.

2.2-lbs.

WAR ONLY.

FIG. 49.

PLAN. Nº 47
I.P.C./D.O.
H.J.L. 13-2-40.

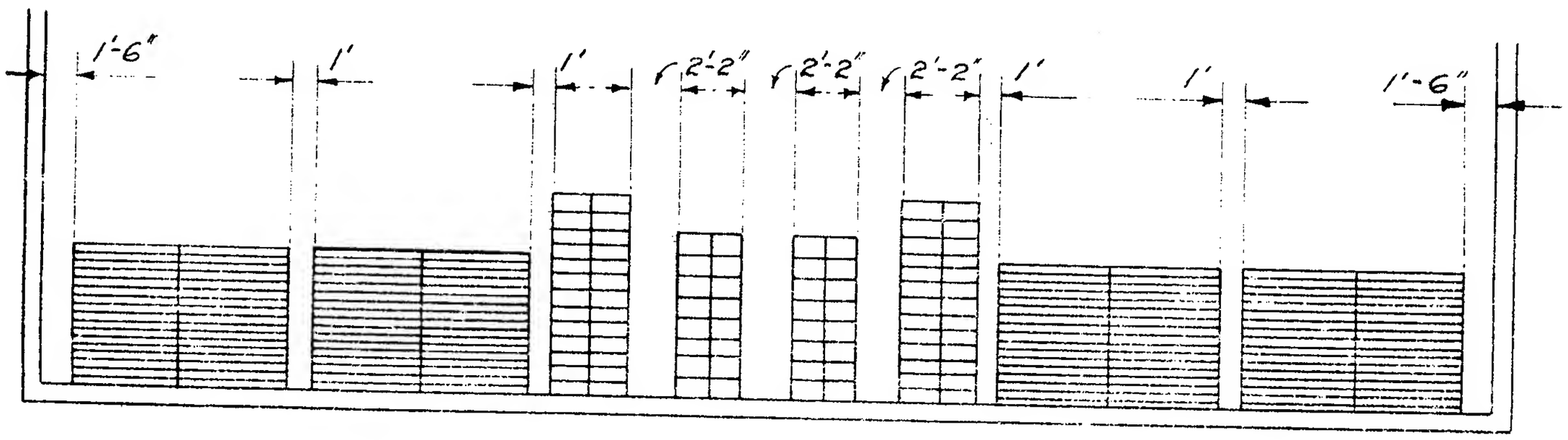


PLAN.

(C) Charges Propelling Boxes, Steel M.96.
2 Rounds per Box.
Boxes 56·2 x 10·5 x 4·4

(S) Shell Boxes Steel M.104.
4 Rounds per Box.
Boxes, 19·3 x 8·2 x 7·2

(F) Fuze Boxes; Wood. M.101.
8 Fuzes per Box.
Boxes, 18·25 x 10·65 x 10·9



(C)
Propelling charge boxes. M96.
3000 boxes stored in 4 double stacks.
(750 boxes in each double stack.)
46 boxes on Bottom tier of each double stack.
Nº of tiers 17 (only 14 boxes on top tier of each double stack.
Nº of Charges. 6000.

(S)
Shell boxes M. 104.
1500 boxes stored in 2 double stacks.
(750 boxes in each double stack.)
62 boxes on Bottom tier of double stack.
Nº of tiers 13 (only 6 boxes in top tier of each double stack.)
Nº of shells 6000.

(F)
A.D. Fuze boxes. M.101.
750 boxes stored in 2 double stacks.
(375 boxes in each double stack.)
48 boxes on bottom tier of each double stack.
Nº of tiers. 8 (only 39 boxes on top tier of each double stack.)
Nº of Fuzes 6000.

When wooden boxes for this type of ammunition are stored, the general principles of this diagram should be followed, but it will be found that stacks will necessarily be of greater height as wooden boxes are of larger dimensions than steel boxes.

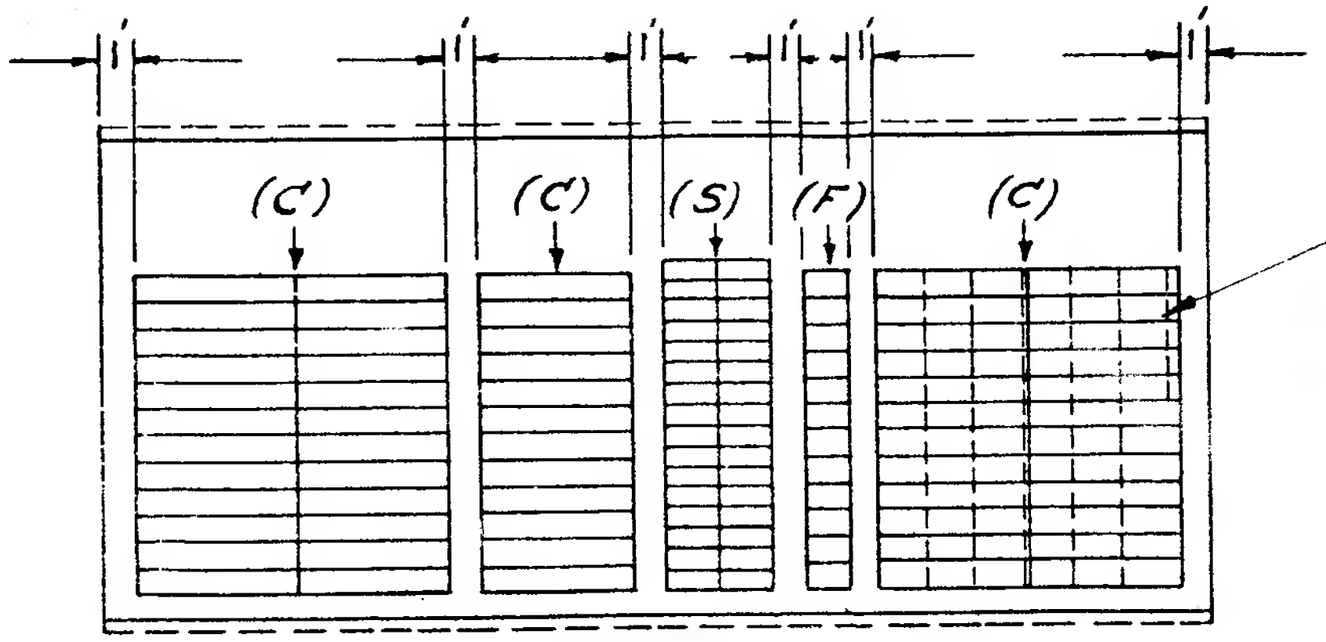
STORAGE DIAGRAM FOR AMMUNITION.

PROJECTOR ROCKET 3 INCH, A.A. Mk I.
IN BINLESS 3 TYPE BUILDINGS.

STORAGE FOR AMMUNITION.

PROJECTOR ROCKET 3 INCH A.A. Mk I
IN NISSEN HUTS.

WAR ONLY.



PLAN.

Remaining 65 Fuze Boxes (shown in dotted lines) to be stored on top of Charge Propelling Boxes.

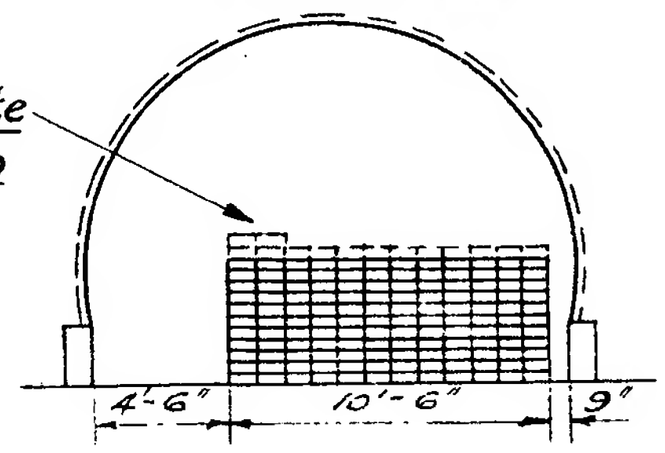
PLAN Nº 48
I.P.C./D.O.
H.J.L. 13-2-41.

(C).	CHARGE PROPELLING BOXES STEEL M.96.	2 CHARGES PER BOX.	BOXES 56·2"x10·5"x4·4"
(S).	SHELL BOXES STEEL M.104.	4 SHELLS PER BOX.	BOXES 19·3"x 8·2"x7·2"
(F).	A.D. FUZE BOXES WOOD M.101.	8 FUZES PER BOX.	BOXES 18·25"x 10·65"x 10·9"

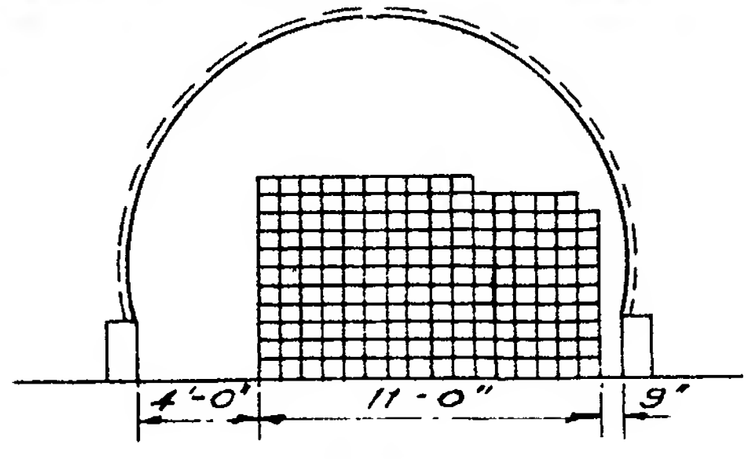
When wooden boxes for this type of ammunition are stored, the general principles of this diagram should be followed, but it will be found that stacks will necessarily be of greater height, as wooden boxes are of larger dimensions than steel boxes.

FIG. 50.

Dotted lines indicate extra boxes on top of single stack of Charge Propelling boxes making 148 boxes.

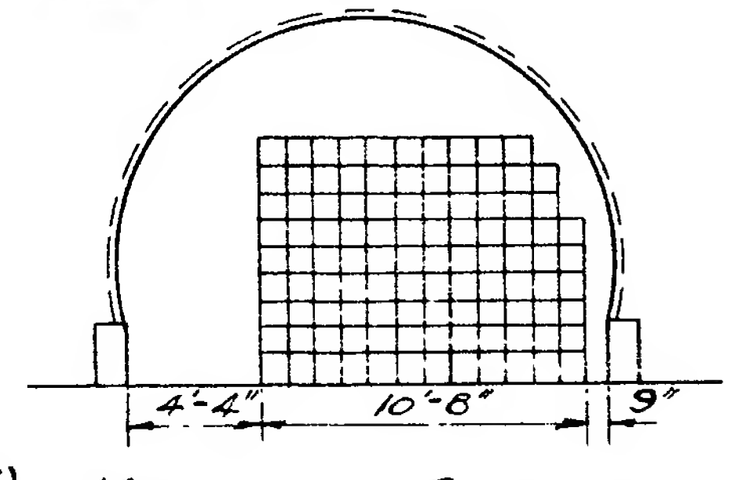


(C) METHOD OF STACKING.
PROPELLING CHARGE STEEL BOXES M.96.
676 Boxes stored in 2 double stacks & 1 single stack.
(264 boxes in each double stack & 148 " " the single stack.)
24 boxes on bottom tier of each double stack
12 " " " " " single stack.
Nº of tiers Double stacks 11
Single stacks 13 (only 2 boxes on the top tier.)
Nº of Charges = 1352.



(S) METHOD OF STACKING
SHELL BOXES STEEL. M.104.
338 boxes stored in 1 double stack.
32 boxes in bottom tier.
Nº of tiers 11.
Nº of Shells. 1352.

The number of boxes quoted in this diagram are for Nissen Huts that are not raised upon walls.
1500 rounds may be stored in Nissen Huts that are raised upon 2'-0" walls.



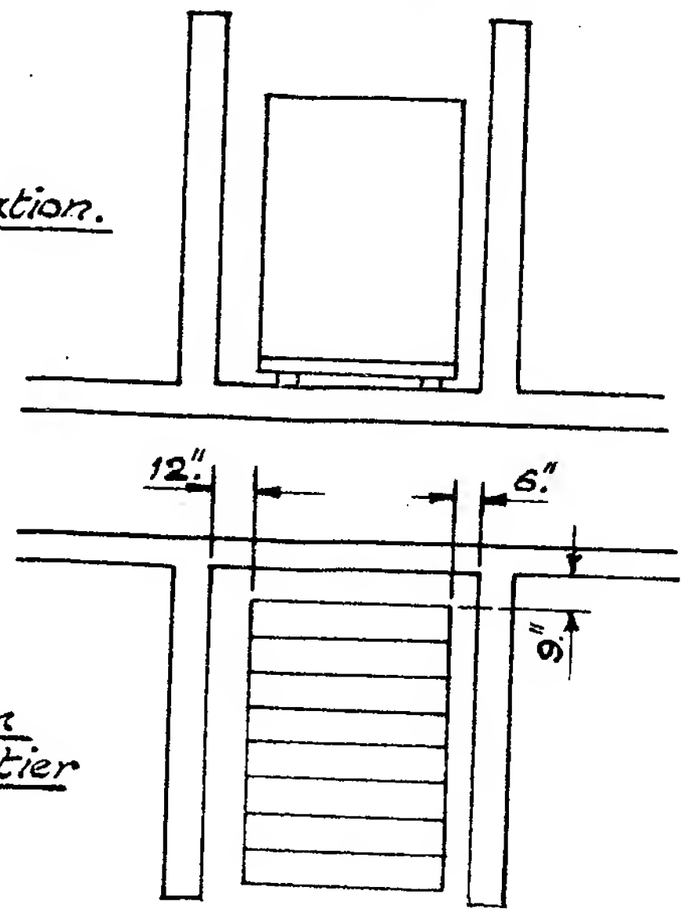
(F) METHOD OF STACKING
A.D. FUZE BOXES WOOD. M.101.
169 boxes to be stored.
104 Boxes stored in one single stack.
12 Boxes on bottom tier.
Nº of tiers. 9.
Nº of fuzes. 832.
Remaining 65 boxes to be placed on top of Charge Propelling stack.
Nº of Fuzes in Fuze stack 832.
Nº of Fuzes stored on Charge Propelling stack 520.
Total Nº of Fuzes stored 1352.

CHARGE PROPELLING BOXES, M97. (WOOD)

2 Charges Per Box.

Boxes: 58·6" × 11·25" × 6·75."

End Elevation.



8 boxes on Bottom tier

Plan of Bottom tier.

Nº of tiers:- 13 (4 boxes on top tier).

100 boxes per bin. 200 Charges.

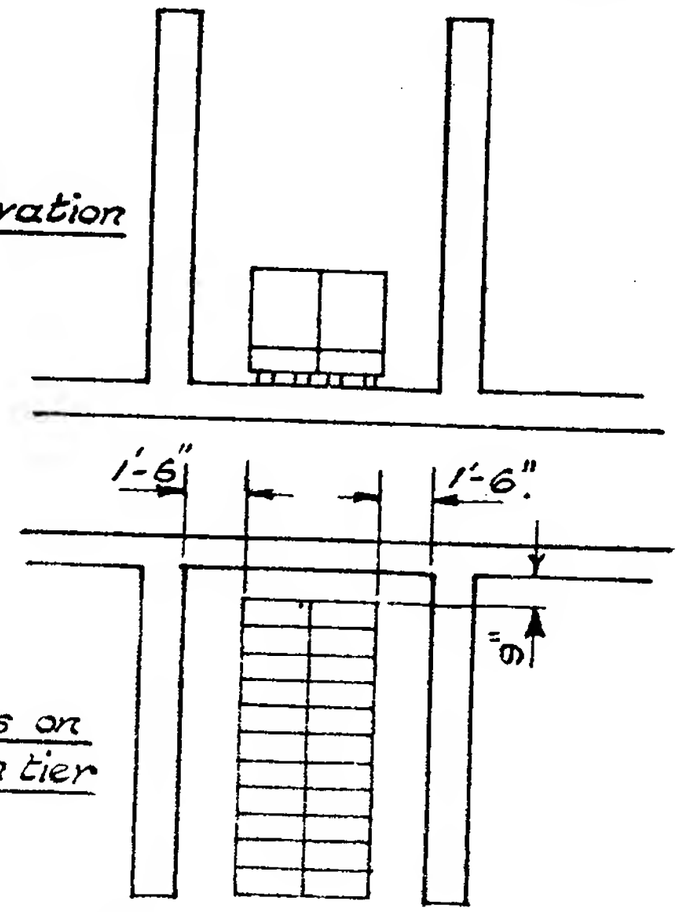
Steel boxes for this store to be stacked in the same manner.

SHELL BOXES, M98. (WOOD)

4 Shells Per Box.

Boxes:- 20·375" × 8·625" × 8·5".

End Elevation



22 boxes on Bottom tier

Plan of Bottom tier

Nº of tiers:- 4 (17 boxes on top tier)

83 boxes per bin. 332 Shells.

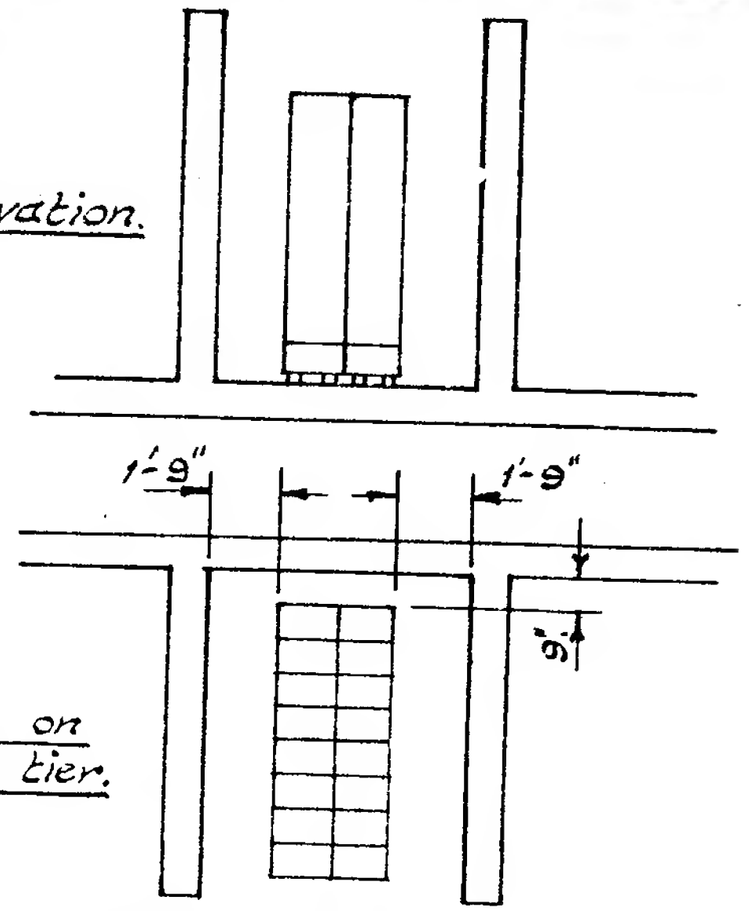
Steel boxes for this store to be stacked in the same manner.

A.D. FUZE BOXES, M101 (WOOD)

8 Fuzes Per Box.

Boxes:- 18·25" × 10·65" × 10·9"

End Elevation.



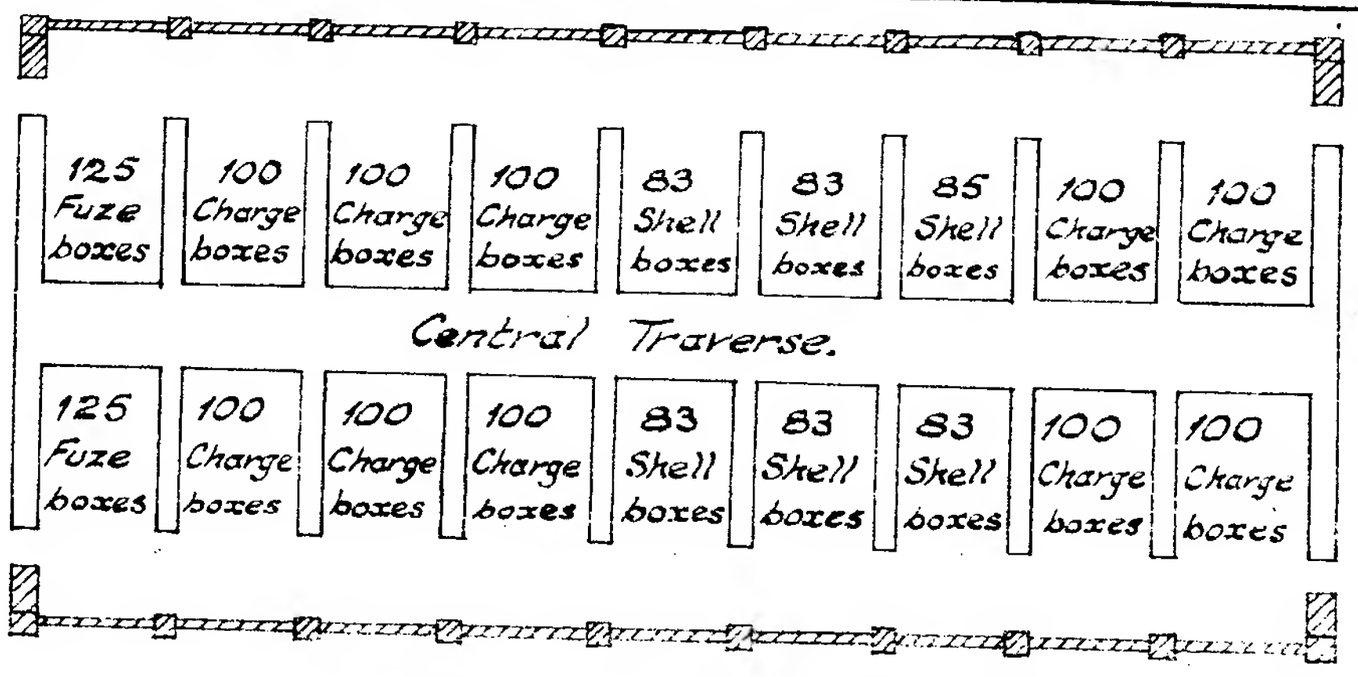
16 boxes on Bottom tier.

Plan of Bottom tier.

Nº of tiers:- 8 (13 boxes on top tier)

125 boxes per bin, 1000 Fuzes.

FIG. 51.



PLAN OF BIN TYPE BUILDING.
Showing Method Stacking.

2 bins, 125 Fuze boxes per bin ---------- 2000 Fuzes

10 bins, 100 Charge Propelling boxes per bin.... 2000 Charges

5 bins, 83 Shell Boxes per bin. ---------- 1660 shells
1 bin, 85 " (19 boxes on top tier) per bin. 340 " } 2000 Shells.

PLAN. Nº 46

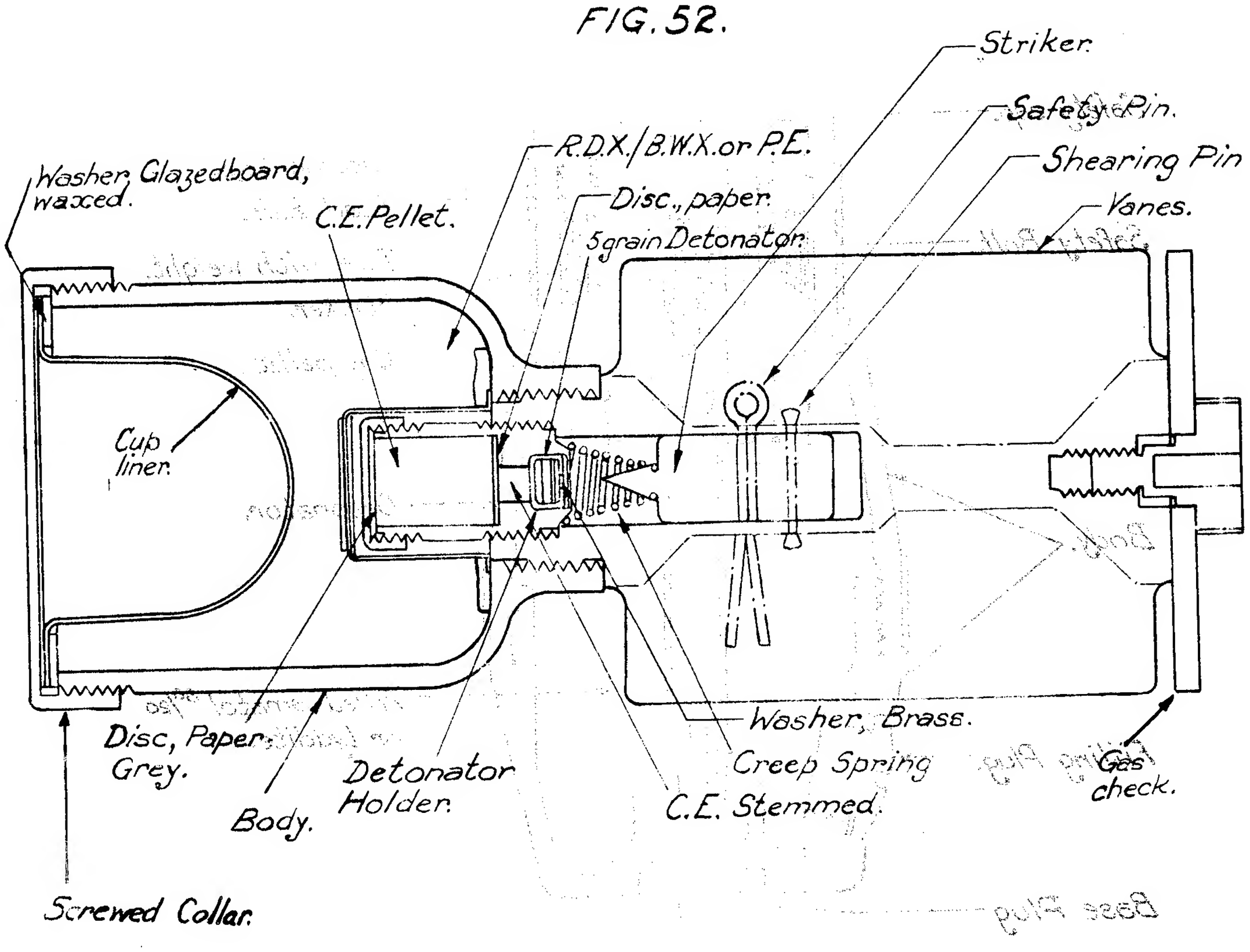
I.P.C./D.O.

H.J.L. 13-2-41.

STORAGE DIAGRAM FOR AMMUNITION PROJECTOR ROCKET 3 INCH A.A. MARK I FOR BIN TYPE BUILDINGS.

WAR ONLY.

FIG. 52.


Striker.
Safety Pin.
Shearing Pin
Vanes.
R.D.X./B.W.X. or P.E.
Disc., paper.
5 grain Detonator.
Washer, Glazedboard, waxed.
C.E. Pellet.
Cup liner.
Washer, Brass.
Creep Spring
Gas check.
Disc, Paper, Grey.
Body.
Detonator Holder.
C.E. Stemmed.
Screwed Collar.

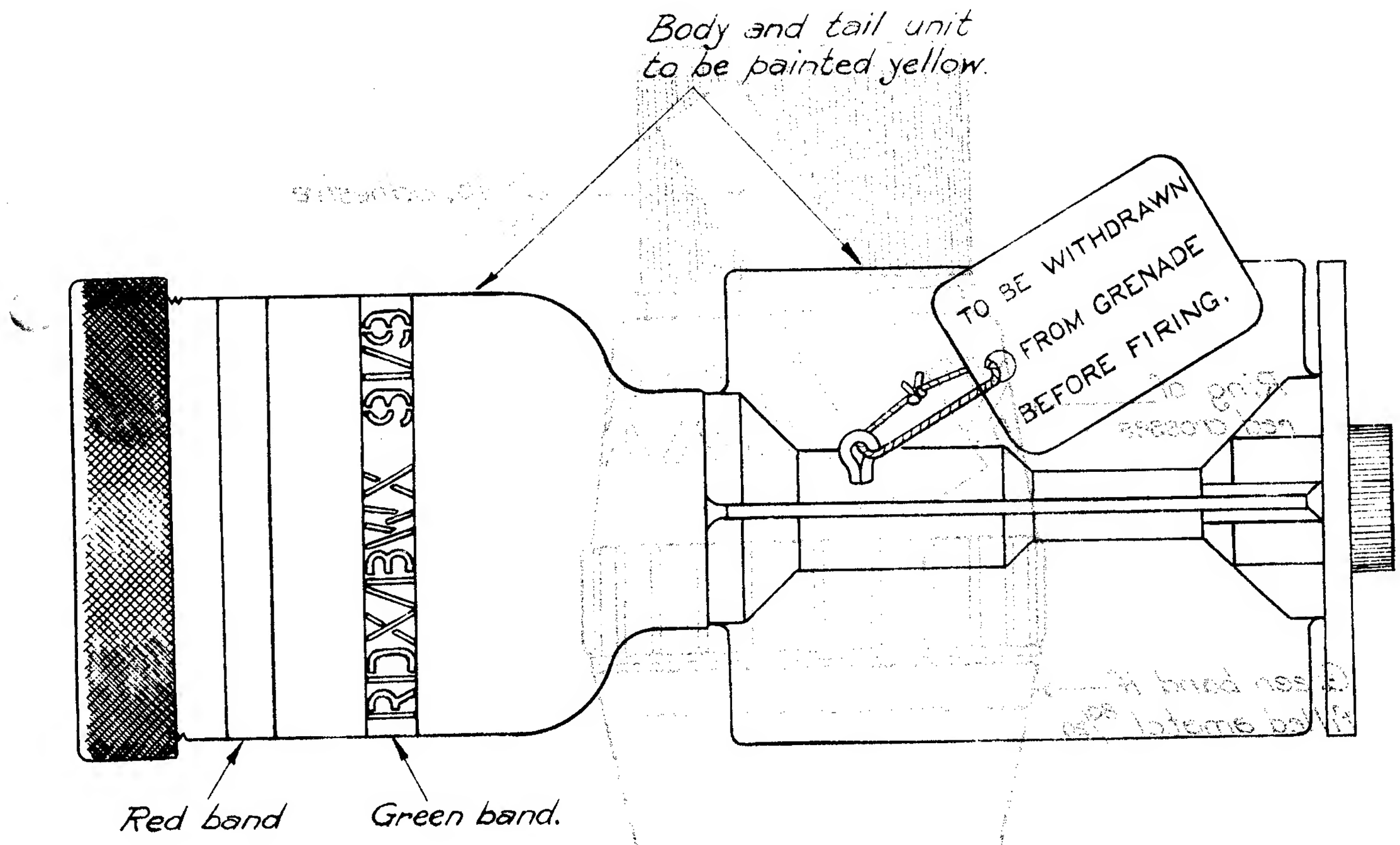
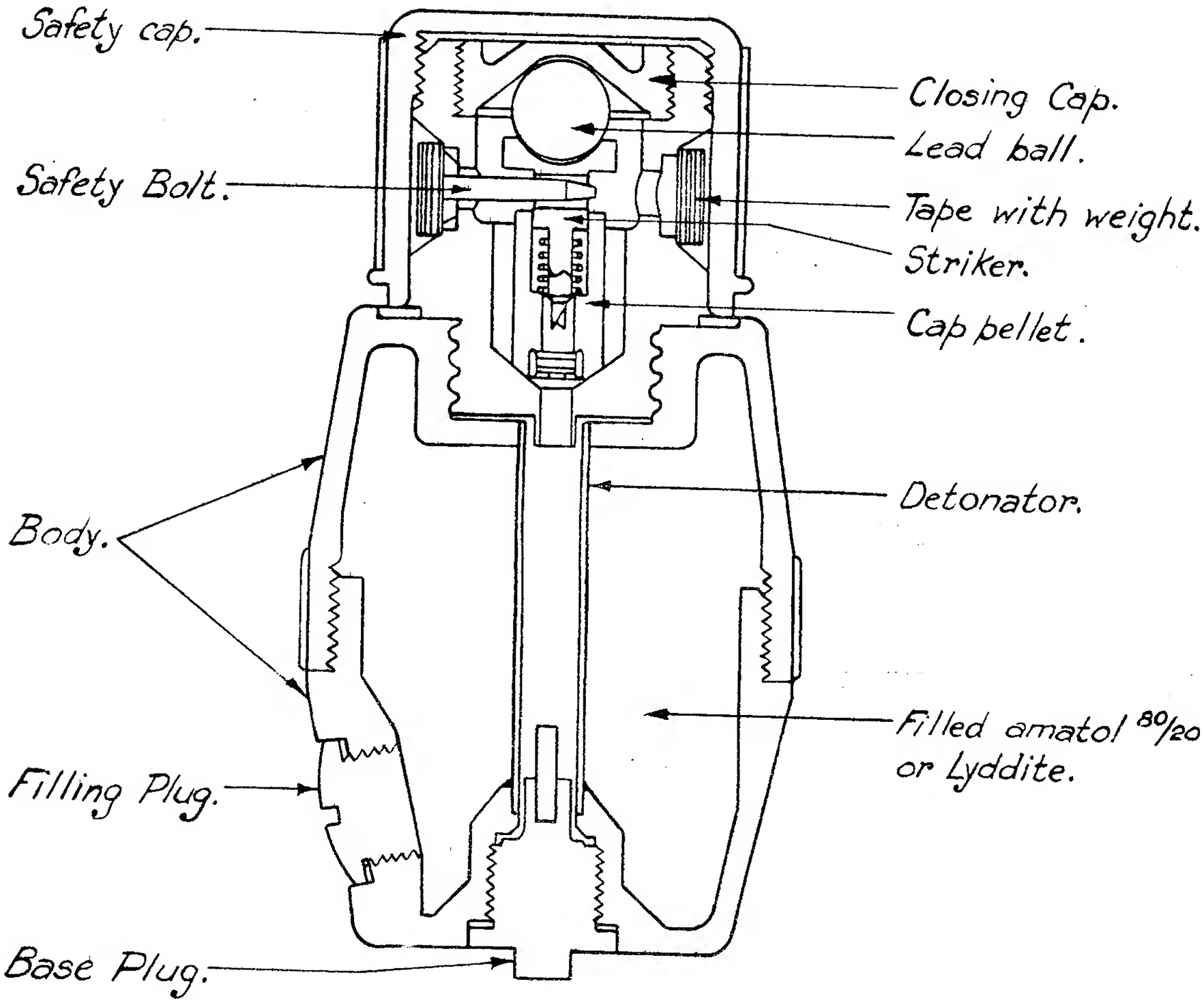

Body and tail unit to be painted yellow.
TO BE WITHDRAWN FROM GRENADE BEFORE FIRING.
RDX/TNT
Red band
Green band.

FIG. 53.


Safety cap.
Safety Bolt.
Body.
Filling Plug.
Base Plug.
Closing Cap.
Lead ball.
Tape with weight.
Striker.
Cap pellet.
Detonator.
Filled amatol 80/20 or Lyddite.

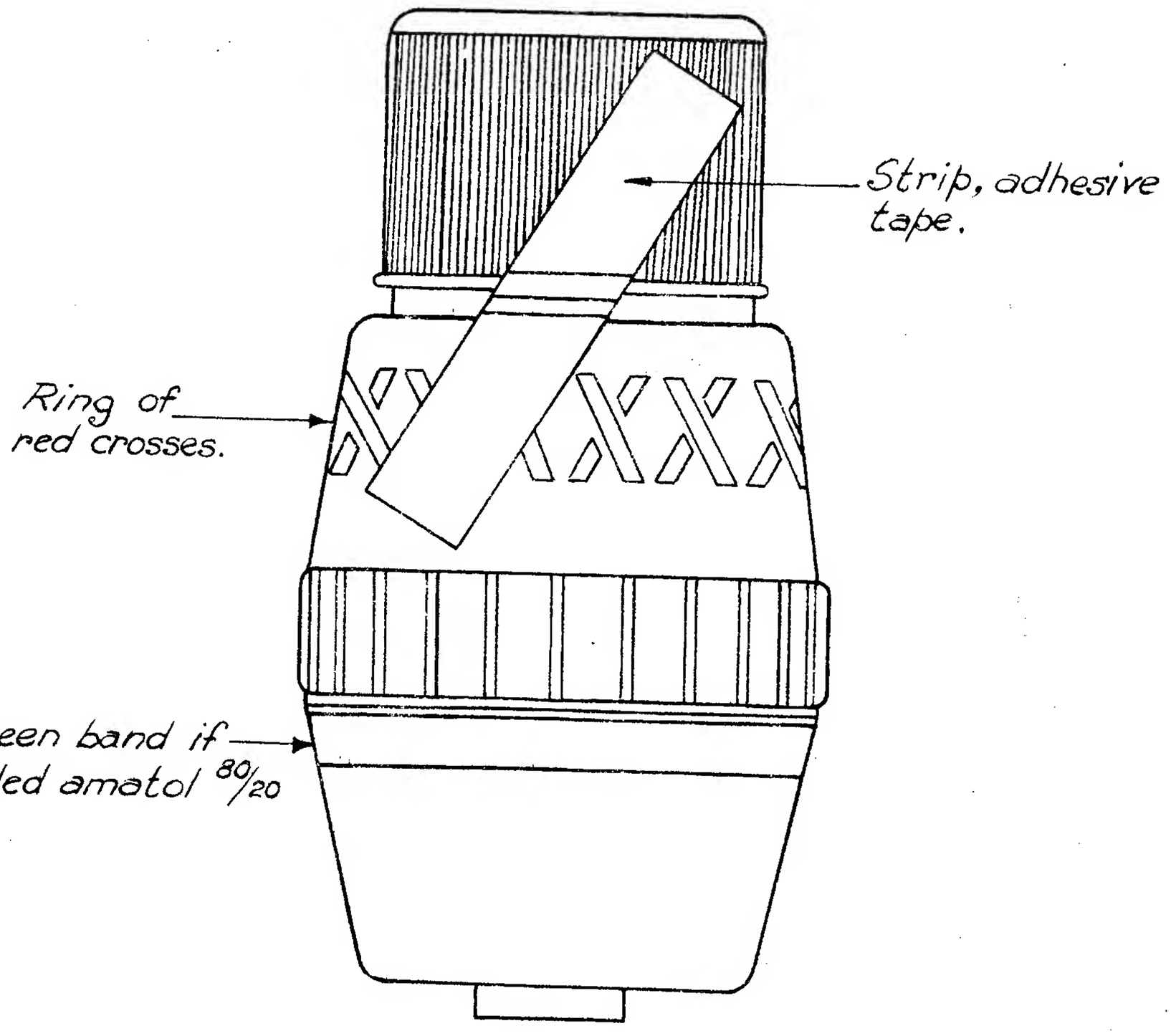

Strip, adhesive tape.
Ring of red crosses.
Green band if filled amatol 80/20

FIG. 54.

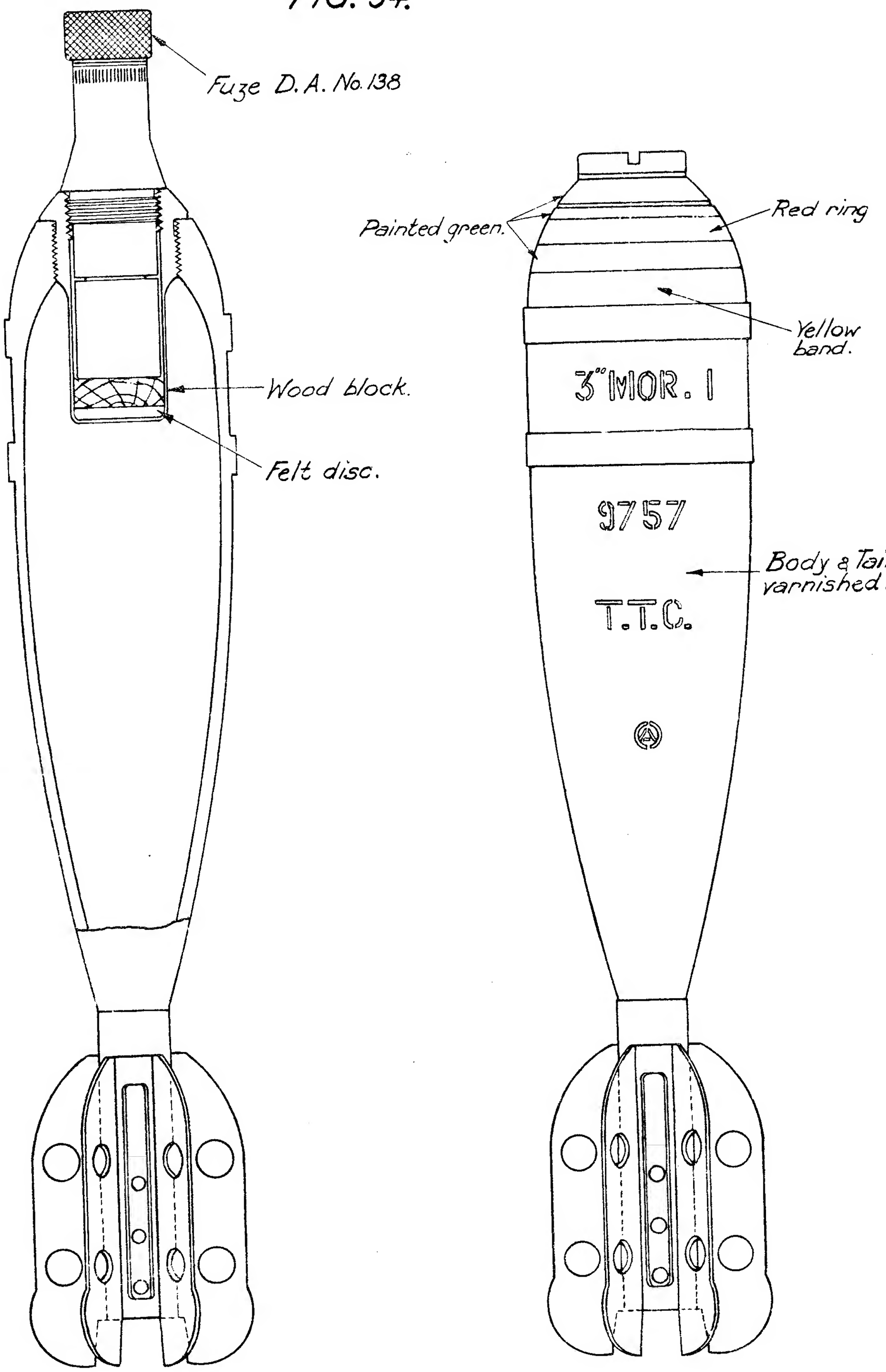
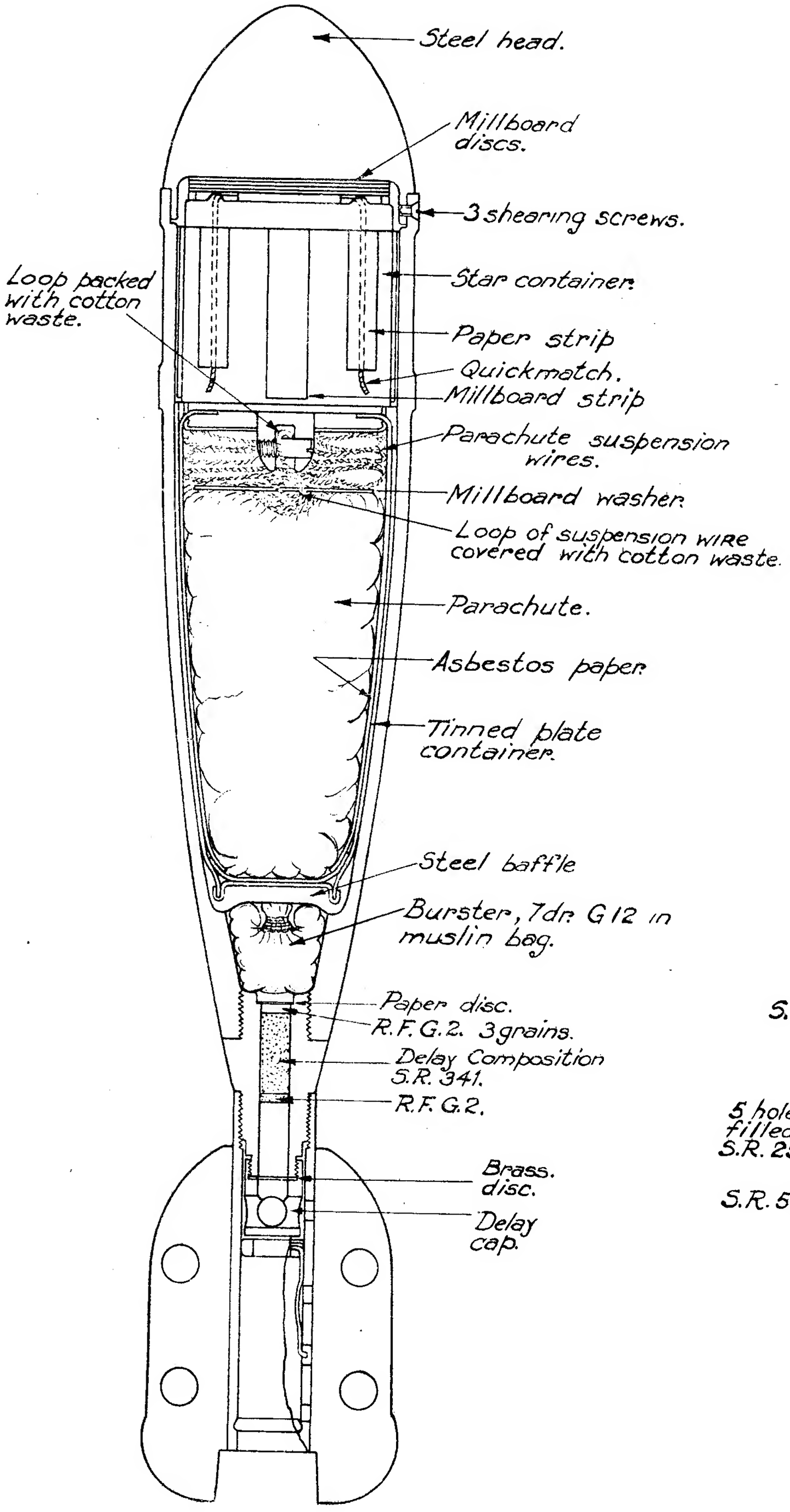
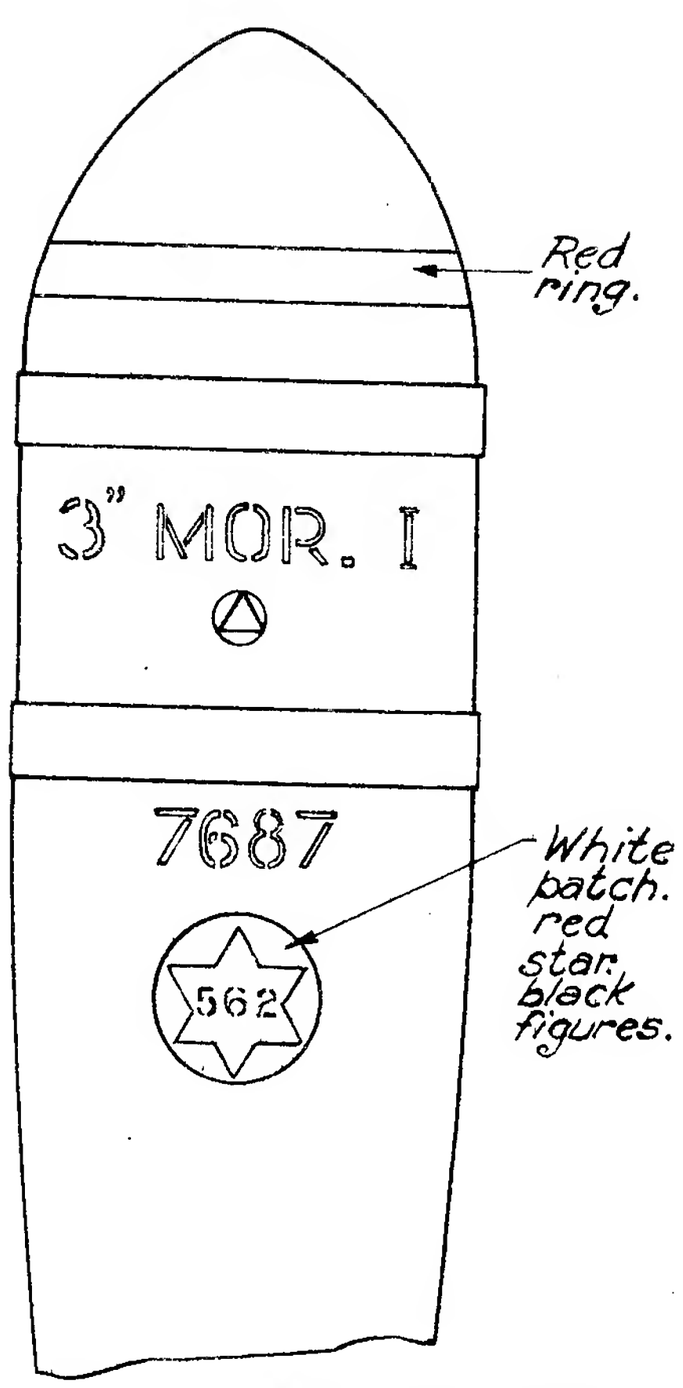

Fuze D.A. No. 138
Wood block.
Felt disc.
Painted green.
Red ring
Yellow band.
3" MOR. I
9757
Body & Tail varnished.
T.T.C.

FIG. 55.





Head, body & tail varnished.

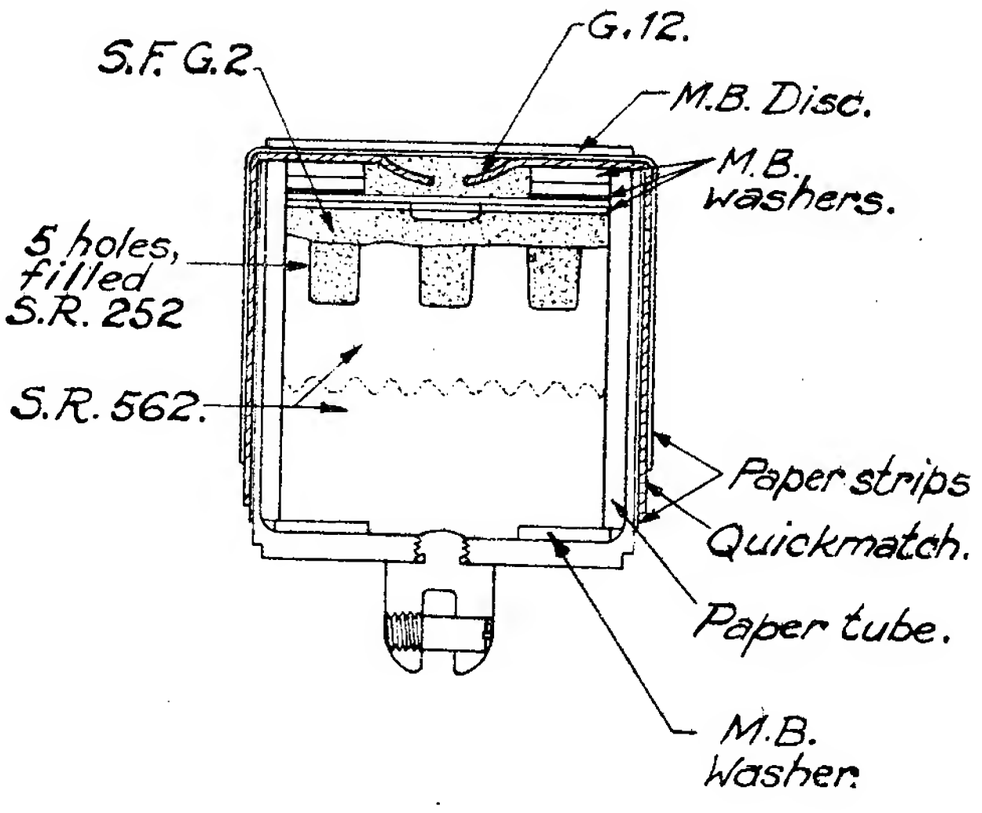


FIG. 56.

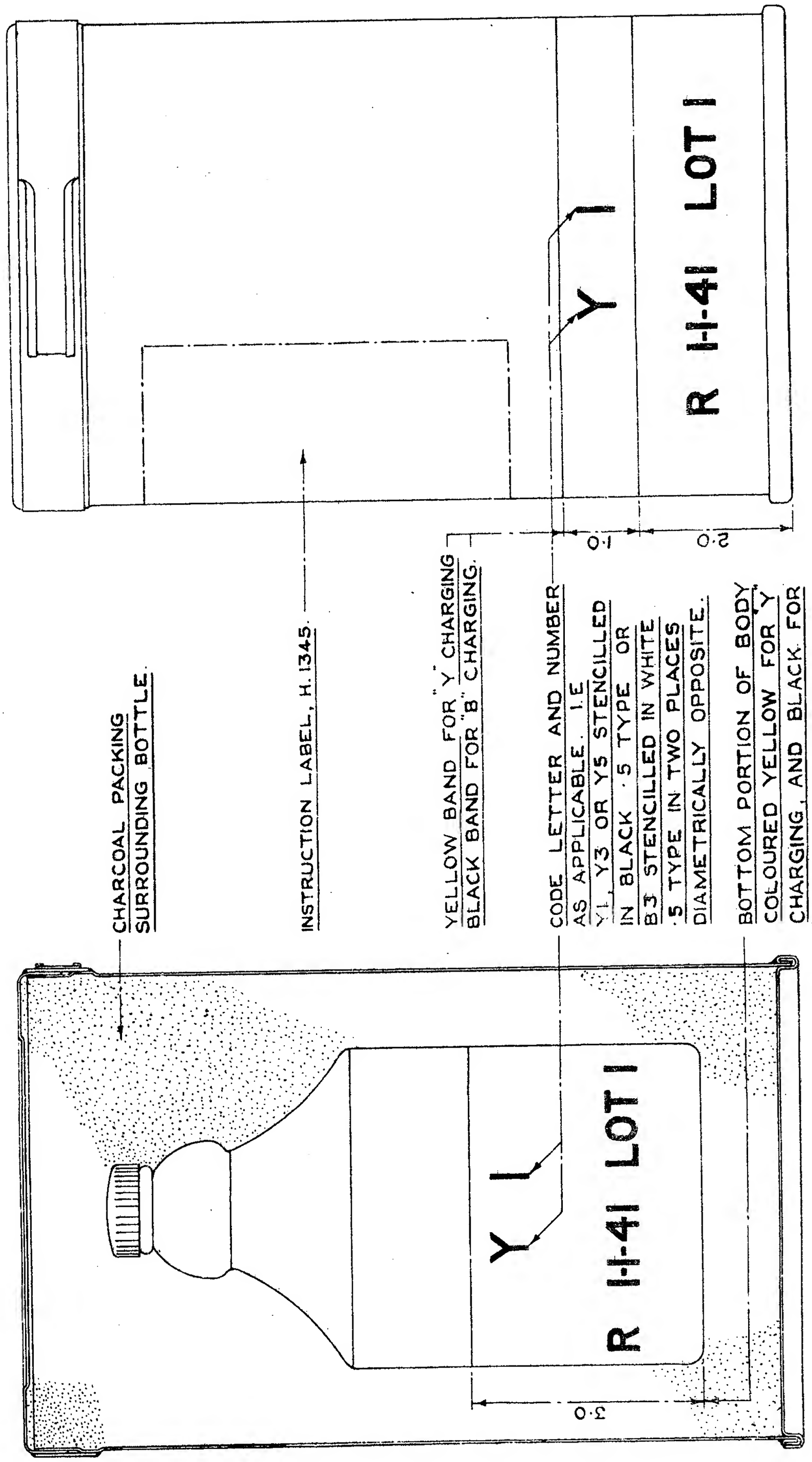

EXTERIOR OF CYLINDER PAINTED GREY.
CHARCOAL PACKING SURROUNDING BOTTLE.
INSTRUCTION LABEL, H.1345.
YELLOW BAND FOR "Y" CHARGING
BLACK BAND FOR "B" CHARGING
CODE LETTER AND NUMBER AS APPLICABLE. I.E Y1, Y3 OR Y5 STENCILLED IN BLACK .5 TYPE OR B3 STENCILLED IN WHITE .5 TYPE IN TWO PLACES DIAMETRICALLY OPPOSITE.
BOTTOM PORTION OF BODY COLOURED YELLOW FOR "Y" CHARGING, AND BLACK FOR "B" CHARGING, REMAINDER OF BODY CREAM.
R I-41 LOT I
Y
0·1
0·2
3·0

FIG. 57.

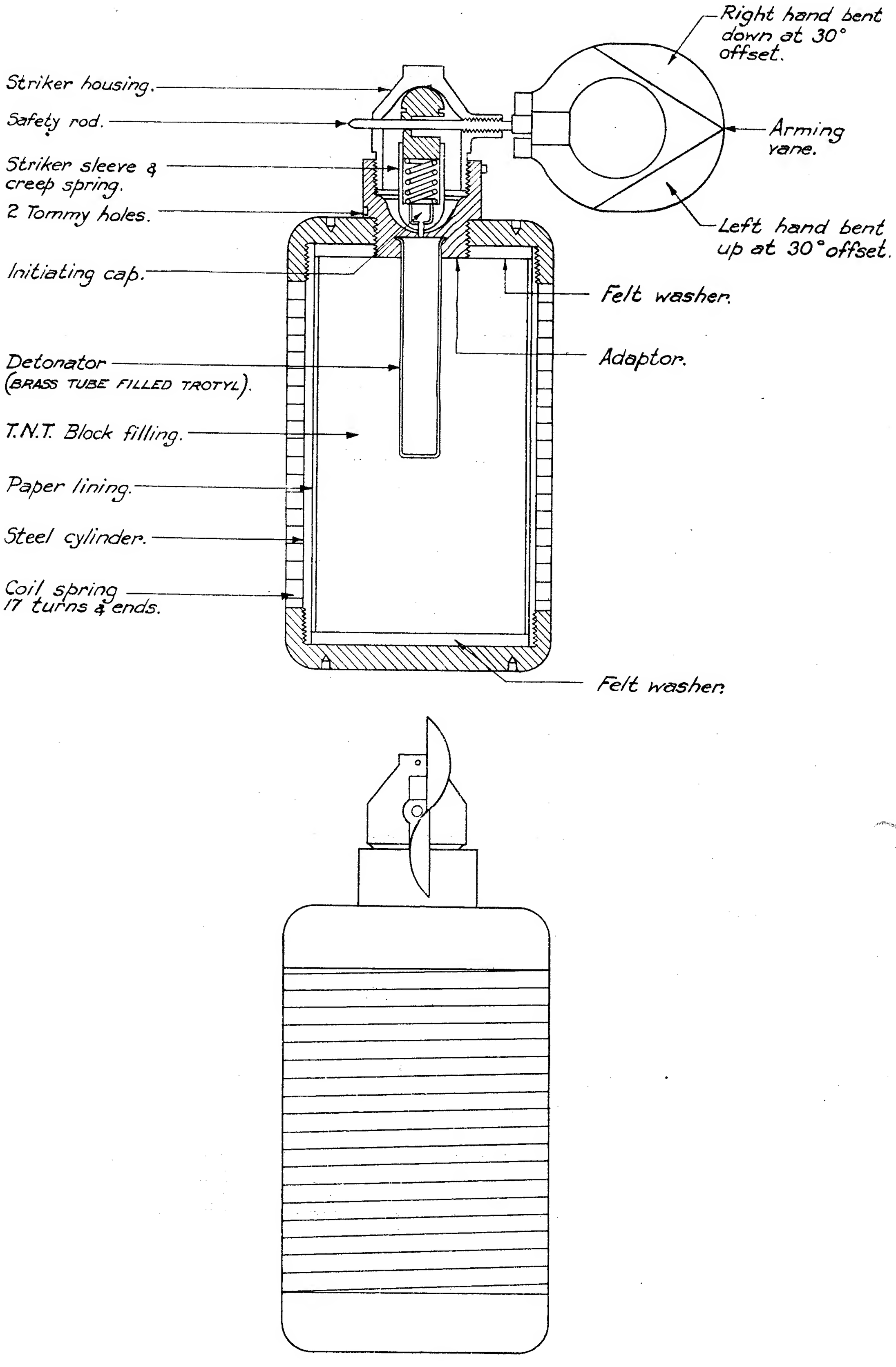

Striker housing.
Safety rod.
Striker sleeve & creep spring.
2 Tommy holes.
Initiating cap.
Detonator (BRASS TUBE FILLED TROTYL).
T.N.T. Block filling.
Paper lining.
Steel cylinder.
Coil spring 17 turns & ends.
Right hand bent down at 30° offset.
Arming vane.
Left hand bent up at 30° offset.
Felt washer.
Adaptor.
Felt washer.

FIG. 58.

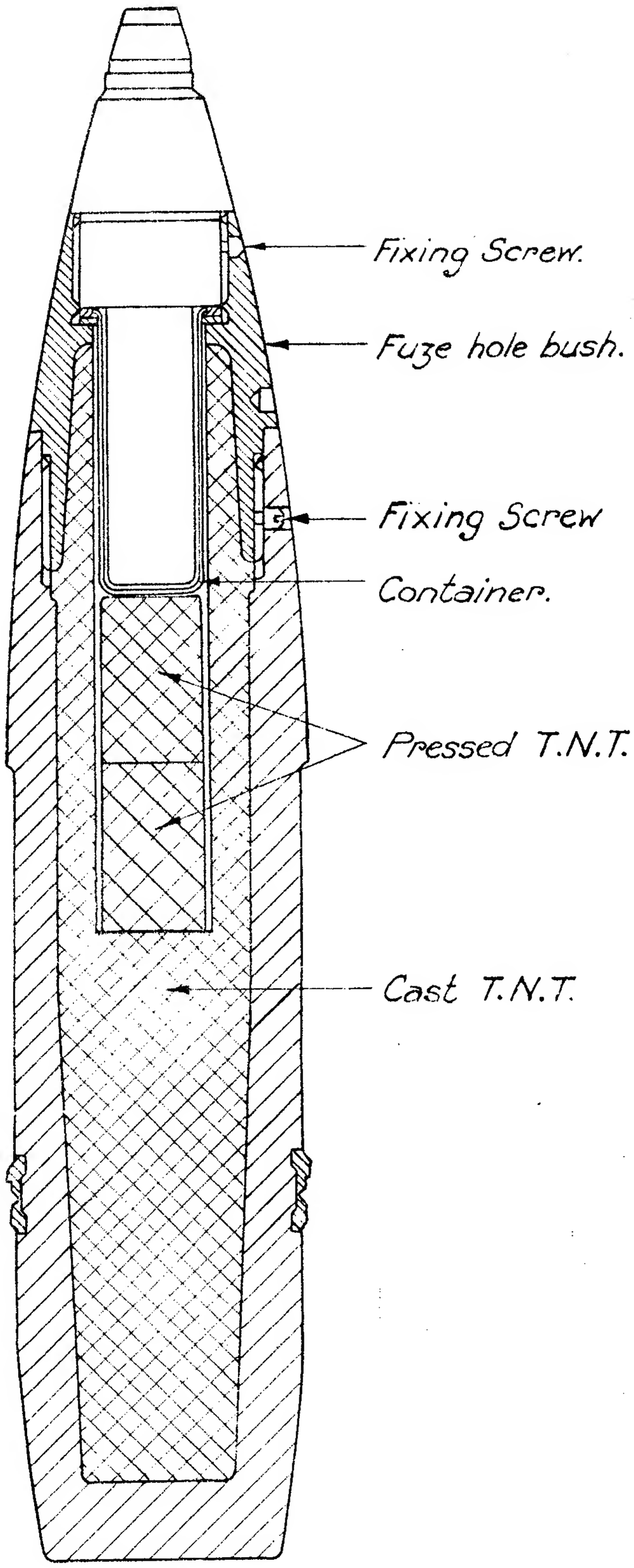
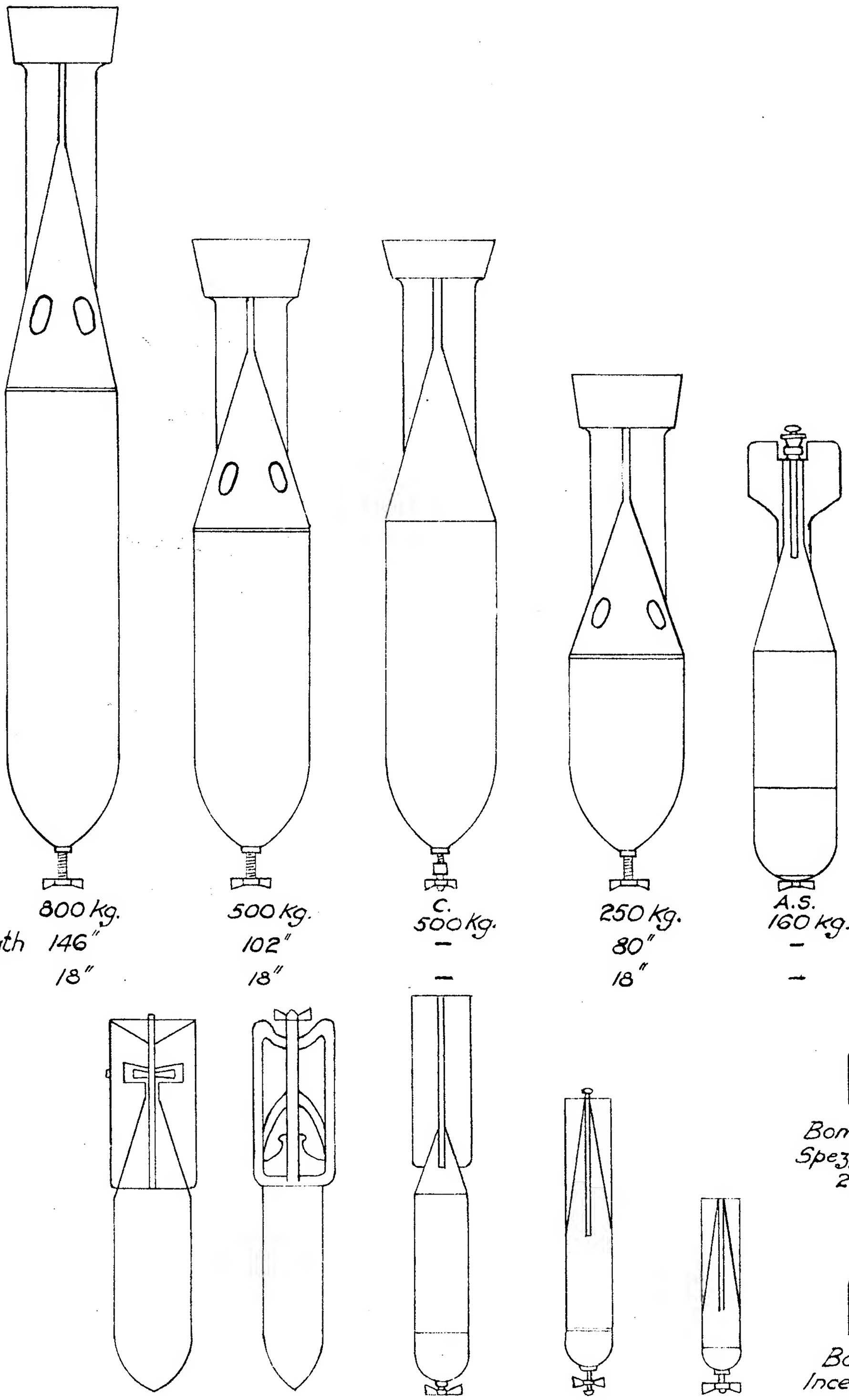

Fixing Screw.
Fuze hole bush.
Fixing Screw
Container.
Pressed T.N.T.
Cast T.N.T.

FIG. 59.



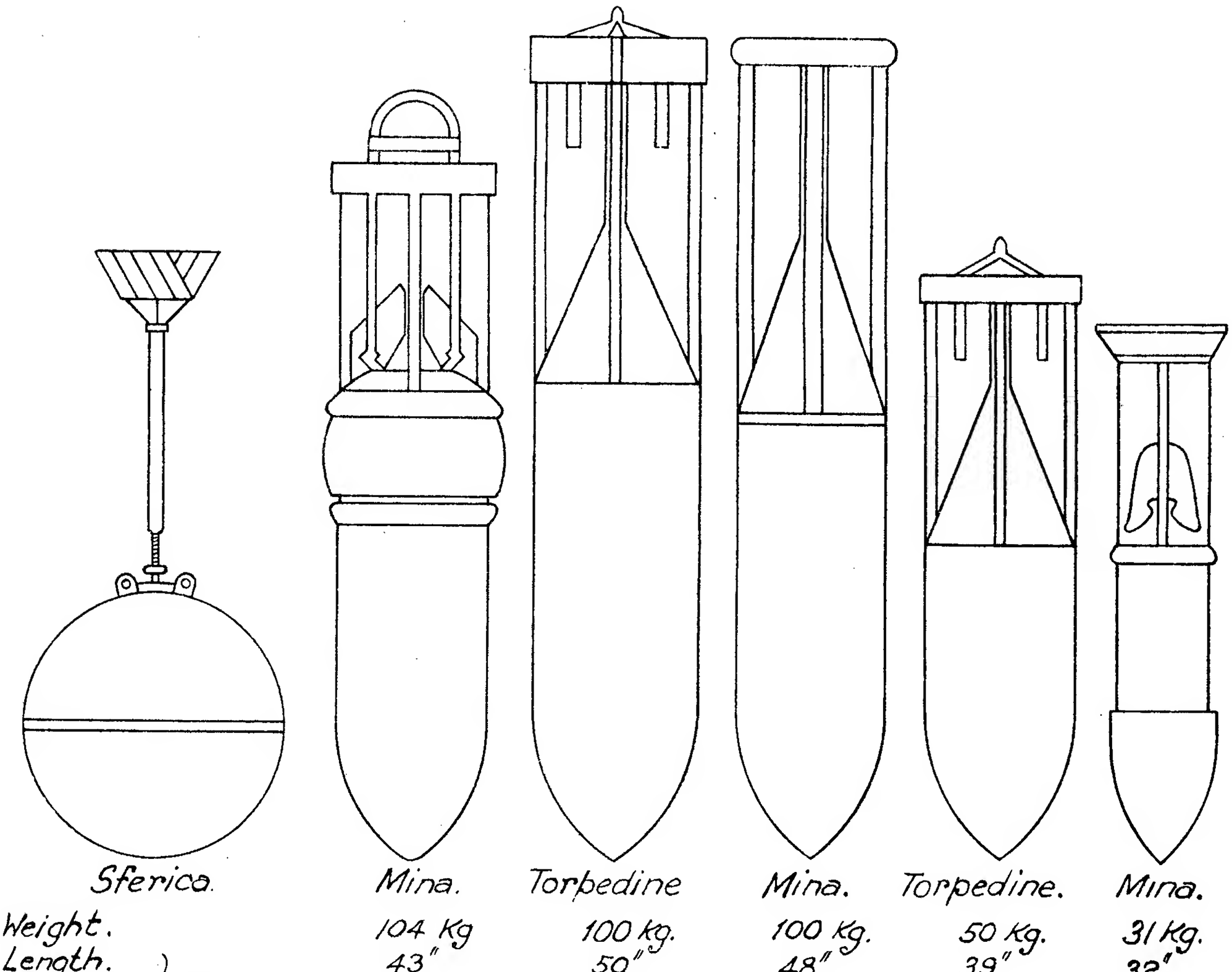
Weight	800 kg.	500 kg.	C. 500 kg.	250 kg.	A.S. 160 kg.	
O/A Length	146"	102"	—	80"	—	
O/A dia.	18"	18"	—	18"	—	

Bombetta. Spezzone 2 Kg.

Bombetta Incendiaria. 1 Kg.

	I	MINA.		D.Q.	C.A.
Weight	20 Kg	15 Kg.	12 Kg.	Quota.	3 Kg.
O/A Length	30"	32"	33"	—	—
O/A dia.	6"	5"	4"	—	—

FIG. 60.



	Sferica.	Mina.	Torpedine	Mina.	Torpedine.	Mina.
Weight.		104 Kg	100 kg.	100 Kg.	50 Kg.	31 Kg.
Length.	16"	43"	50"	48"	39"	32"
Diameter.		10"	11"	10"	10"	8"

FIG. 61.